

Manufacturers Record

Reg. U. S. Patent Office



JULY, 1936

BALTIMORE, MD.

SOUTHERN INDUSTRY EXPANDS

Industrial plant construction in the South during the first half of this year exceeds by 187 per cent the total for the first half of 1935. No other branch of construction activity shows so striking a gain.

New enterprises and expansion programs of established concerns in a variety of industries are under way in all parts of the South from Maryland to Texas.

Industrial Plants Awards (Jan. 1 to July 1):

1934	1935	1936
\$35,634,000	\$43,729,000	\$125,486,000

Industrial plant awards for the first six months of this year are well ahead of the total for the entire year of 1934, and nearly up to the 1935 figure.

Proposed work on industrial plant projects aggregated more than \$52,000,000 during May and June.

All construction in the South during the first half of 1936 is well ahead of the same period last year, setting a six year record, contracts to date being valued at \$423,355,000 this year, compared with \$261,979,000 in 1935.



So we made them!

We had to have better fittings for the installation of thousands of Grinnell Automatic Sprinkler Systems throughout the world. Fittings with proper chamfer, so easy starting would be assured. With sharp, air-tight threads. With smooth cores to allow free flow.

Because we couldn't get what we wanted, Grinnell Cast Iron Fittings were made. They meet our own exacting specifications. And they are available to you at a cost no higher than that of other fittings. Their advantages are easily understandable. If you have used them, you know their extra quality and workability. If you have not, one trial will prove their superiority.

GRINNELL



COMPANY

EXECUTIVE OFFICES

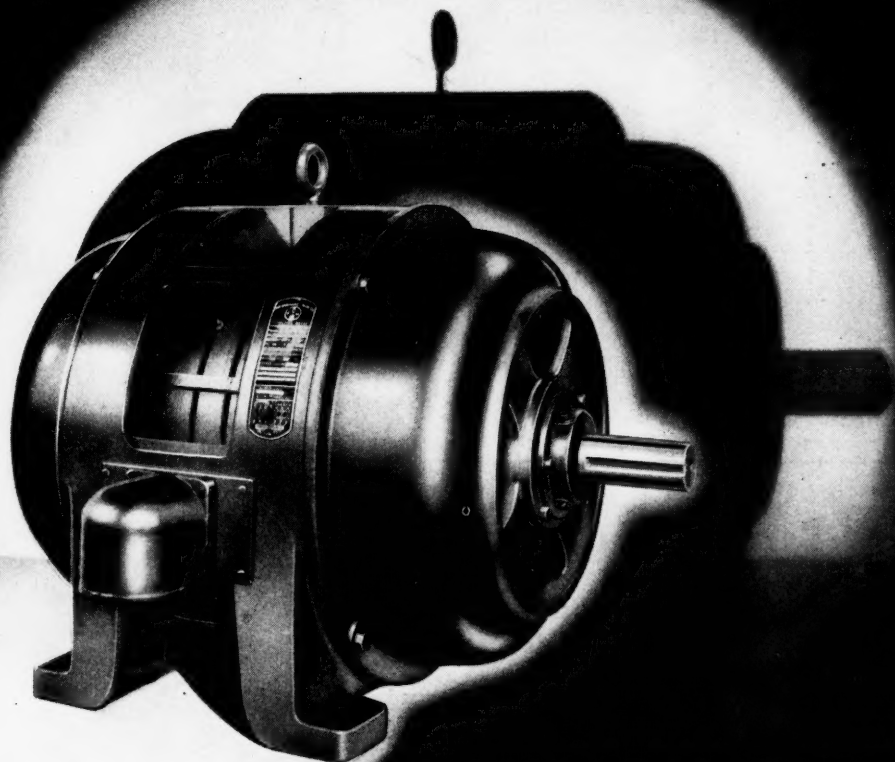
PROVIDENCE, R. I.

Branch Offices in Principal Cities

GRINNELL

WHENEVER PIPING IS INVOLVED

THE Most FOR YOUR MONEY



WE do not build "price" motors. "Price" motors invariably mean manufacturing and engineering short cuts and lessened quality.

That F-M motors cost little or no more than the field is the happy result of large scale production. The engineering is there. The in-built qualities that make for long, dependable service are there. Engineered in accordance with the latest refinements and manufactured to the highest standards of workmanship, F-M motors are built to be economical throughout the years—to eliminate the heavy expense incurred by shut-downs and excessive maintenance.

In the complete F-M line, which ranges from $\frac{1}{4}$ to 10,000 hp., your motor dollar buys such special long-life features as sealed-in ball bearings. Grease-tube lubrication. One-piece locked and welded stators. Welded and brazed leads in place of soldered.

Before you buy, *investigate!* Ask the man from Fairbanks-Morse how much more he can give you for your motor dollar. Address Department J-31, Fairbanks, Morse & Co., 900 S. Wabash Avenue, Chicago. 34 branches at your service throughout the United States.

6608-EA 40, 108

106
YEARS OF
PRECISION
MANUFACTURING

FAIRBANKS - MORSE

Motors



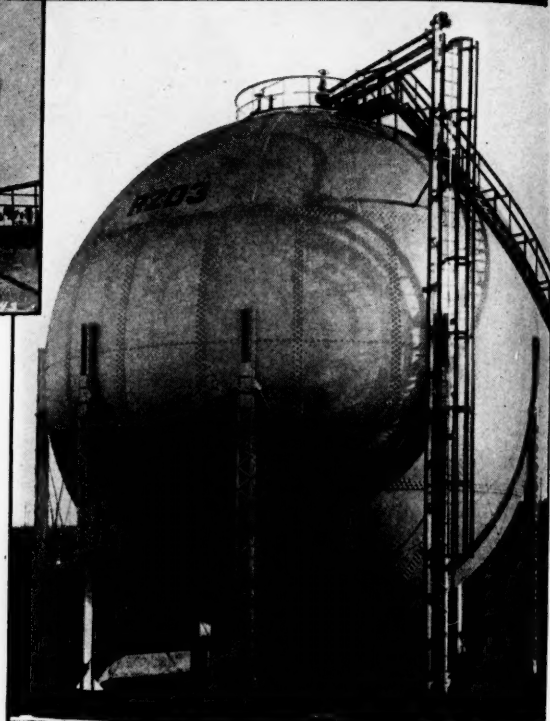
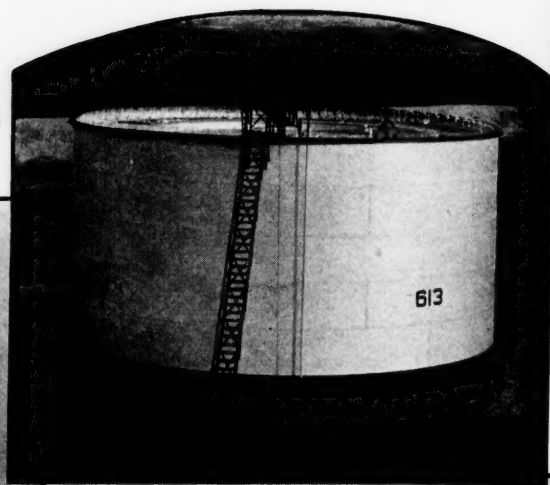
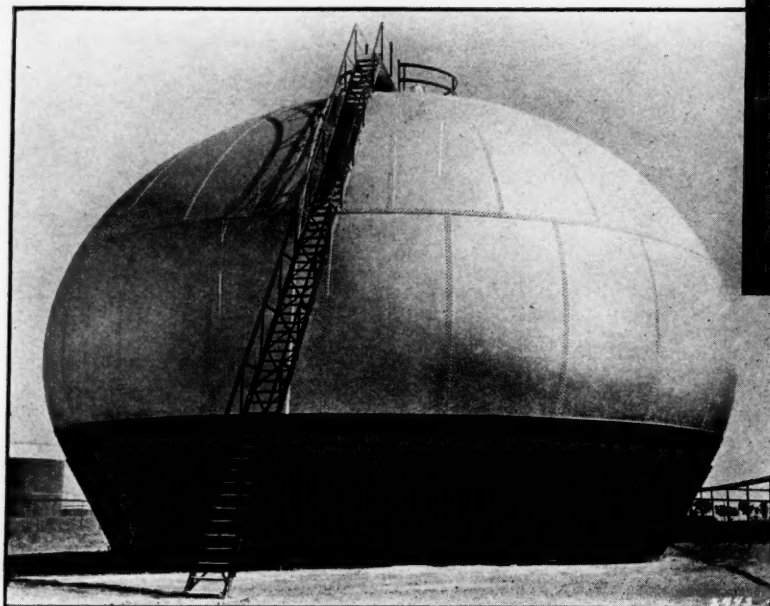
POWER, PUMPING AND WEIGHING EQUIPMENT

Entered as second-class matter at the postoffice, Baltimore, Md., under the act of March 3, 1879, Volume CV, No. 7 Monthly

JULY NINETEEN THIRTY-SIX

9
3

STEEL TANKS



... in Standard Sizes and Special Designs

There was a time when ordinary flat bottom tanks were used to store all kinds of liquids. During the past few years, however, we have discovered that it is highly advantageous to use special types of tanks for many purposes. Some of them are:

THE HORTONSPHERE—This spherical container is used to store gases and liquids under pressures of 20 lbs. per sq. in. and up. Standard sizes are 5,000 to 12,500 bbls. capacity.

THE HORTONSPHEROID—This design provides economical storage for liquids at pressures of from one to twenty lbs. per sq. in. It is built in capacities of 2,500 to 100,000 bbls.

WIGGINS ROOFS—Flat bottom tanks are often equipped with special roofs to prevent evaporation losses from oil and other volatile liquids. Wiggins Pontoon Roofs are used for working tanks and Wiggins Breather Roofs on standing storage tanks.

WIGGINS BALLOON—When connected to the vapor space of oil tanks, the Wiggins Balloon prevents evaporation loss by storing vapor during periods of expansion and returning it to the tanks when the vapor contracts. Several tanks can be connected to one balloon.

We also build special types of elevated tanks for water supply. The radial-cone design is used for large municipal installations where a low range in head is desirable. Ellipsoidal-bottom elevated tanks are used extensively to provide gravity water pressure for municipal water service and for general water service and fire protection at industrial plants.

When contemplating tank installations of any kind, write our nearest office for information or quotations.

Above: Gasoline tank equipped with a Wiggins Pontoon Roof to prevent evaporation loss and reduce the fire hazard. Left: 20,000-bbl. Hortonspheroid at Ponca City, Okla. It is used to store natural gasoline under pressure. Lower right: 7,500-bbl. Hortonsphere used to store volatile gasoline under pressure.

Our TECHNICAL BULLETIN NO. 11 gives complete information on flat-bottom oil storage tanks. We will also be glad to send you information on Wiggins Roofs, Balloons, Hortonspheres and Hortonspheroids. Address our nearest office for copies.

CHICAGO BRIDGE & IRON WORKS

Birmingham	1530 North Fiftieth St.	New York	3313-165 Broadway Bldg.	Philadelphia	1619-1700 Walnut Street Bldg.
Dallas	1408 Dallas Athletic Club Bldg.	Cleveland	2216 Rockefeller Bldg.	Detroit	1510 Lafayette Bldg.
Houston	2919 Main Street	Chicago	2106 Old Colony Bldg.	Boston	1510 Consolidated Gas Bldg.
Tulsa	1611 Thompson Bldg.	San Francisco	1040 Rialto Bldg.	Havana	Edificio Abreu 402

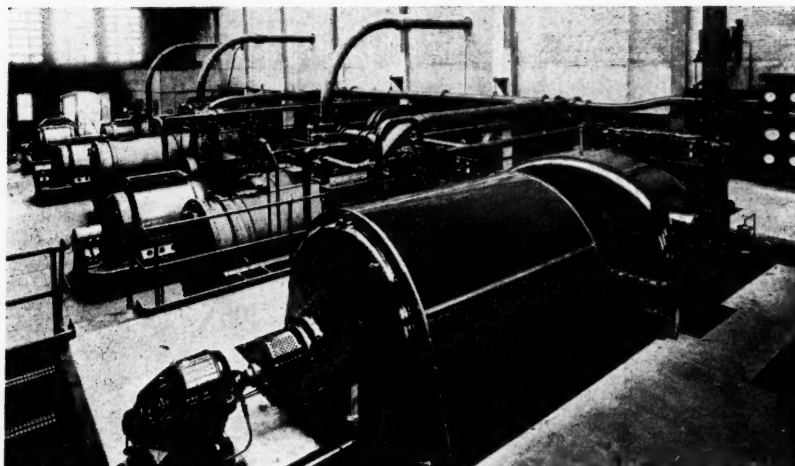
Plants in BIRMINGHAM, CHICAGO and GREENVILLE, PA.

B-459

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1936**

Volume CV No. 7



Complete \$350,000 Power Plant at Savannah, Ga.
Savannah Electric and Power Co., installs new turbine generator and auxiliaries, at cost of \$350,000, under direction of Stone & Webster Corp.

MANUFACTURERS RECORD

Devoted to the Upbuilding of the
Nation Through the Development
of the South and Southwest as the
Nation's Greatest Material Asset

Published Monthly

by the
**MANUFACTURERS RECORD
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**PUBLISHERS DAILY CONSTRUCTION BULLETIN AND
BLUE BOOK OF SOUTHERN PROGRESS**

Member
A.B.C.

JULY NINETEEN THIRTY-SIX

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YOUNGSTOWN'S Super-inspection...

• *means*
lighter work for YOU

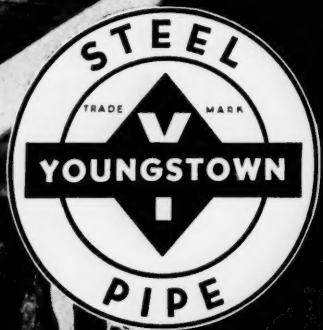
In every YOUNGSTOWN pipe-mill, staffs of inspectors, who operate in complete independence of the manufacturing department, constantly check and recheck each step in the manufacturing process. Their job is to make sure that every length of pipe is sound of weld, uniformly strong and ductile, and comes to you pressure-tested, free from flaws and cleanly and accurately threaded. Because they work so hard, your work is made easier.

THE YOUNGSTOWN SHEET AND TUBE COMPANY

Manufacturers of Carbon and Alloy Steels

General Offices - - YOUNGSTOWN, OHIO

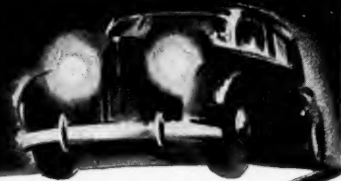
Tubular Products; Sheets; Plates; Tin Plate; Bars; Rods;
Wire; Nails; Conduit; Unions; Tie Plates and Spikes.



613

**STANDARD WEIGHT
EXTRA STRONG
DOUBLE EXTRA STRONG
BLACK, GALVANIZED and COPPEROID**

EVERY NIGHT MILLIONS OF MOTORISTS NEED THE SAFETY OF



CONCRETE

VARIOUS authorities agree that the death rate per automobile accident is much greater after dark than during daylight hours.

At the recent meeting of the American Association of State Highway Officials, an authoritative speaker pointed out this fundamental fact: *A light-colored matte surfaced pavement offers best visibility and therefore greatest safety by night.*

Concrete meets that requirement perfectly. Its light gray matte surface reflects more light; brings obstacles and pedestrians into relief; makes passing safer. Its sharply defined edge helps motorists stay on the road.

Concrete conforms to the standards for safe pavements set up by the Illuminating Engineering Society in 1934. In the proceedings of the 13th annual meeting of the Highway Research Board it is

stated that the reflection factor for portland cement concrete is many times higher than that of dark colored pavements.

That's only a part of concrete's story. In addition, it is skid-resistant, wet or dry . . . it saves motorists money by reducing gas, tire and repair bills . . . it costs less than other pavements of equal load-bearing capacity . . . and no other pavement even approaches its economy of surface maintenance.

Economics, design and construction of concrete pavements are summarized in our Concrete Pavement Library. Let us send you any or all of the booklets—

- (1) "Rational Planning of a Public Highway Program";
- (2) "Concrete Road Design Simplified and Correlated with Traffic";
- (3) "Short Count Traffic Surveys";
- (4) "What Old Concrete Roads Tell Us";
- (5) "Concrete Pavement Manual."

PORTLAND CEMENT ASSOCIATION, Dept. A7-21, 33 W. Grand Ave., Chicago, Ill.





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A COMPLETELY ...SAFE TREAD...

—from every possible angle, under any condition. For light and heavy duty. A sanitary flooring that drains quickly, is easily kept clean. Low first cost. No maintenance cost. PERMANENT. Available in Super-Diamond, Standard Diamond, Diamondette and other patterns to meet all requirements. Immediate delivery.

Write for detailed literature, and ask our special representative to submit proposal and samples made to your specification.

Pattern shown is Super-Diamond in actual size.

OTHER "A.W." QUALITY PRODUCTS

Blue Annealed Sheets
& Strip.

Sheared Steel Plates.
Billets, Blooms & Slabs.
"Swede" Pig Iron.

"A.W." "70-90"
Super Strength Steel

ALAN WOOD STEEL COMPANY

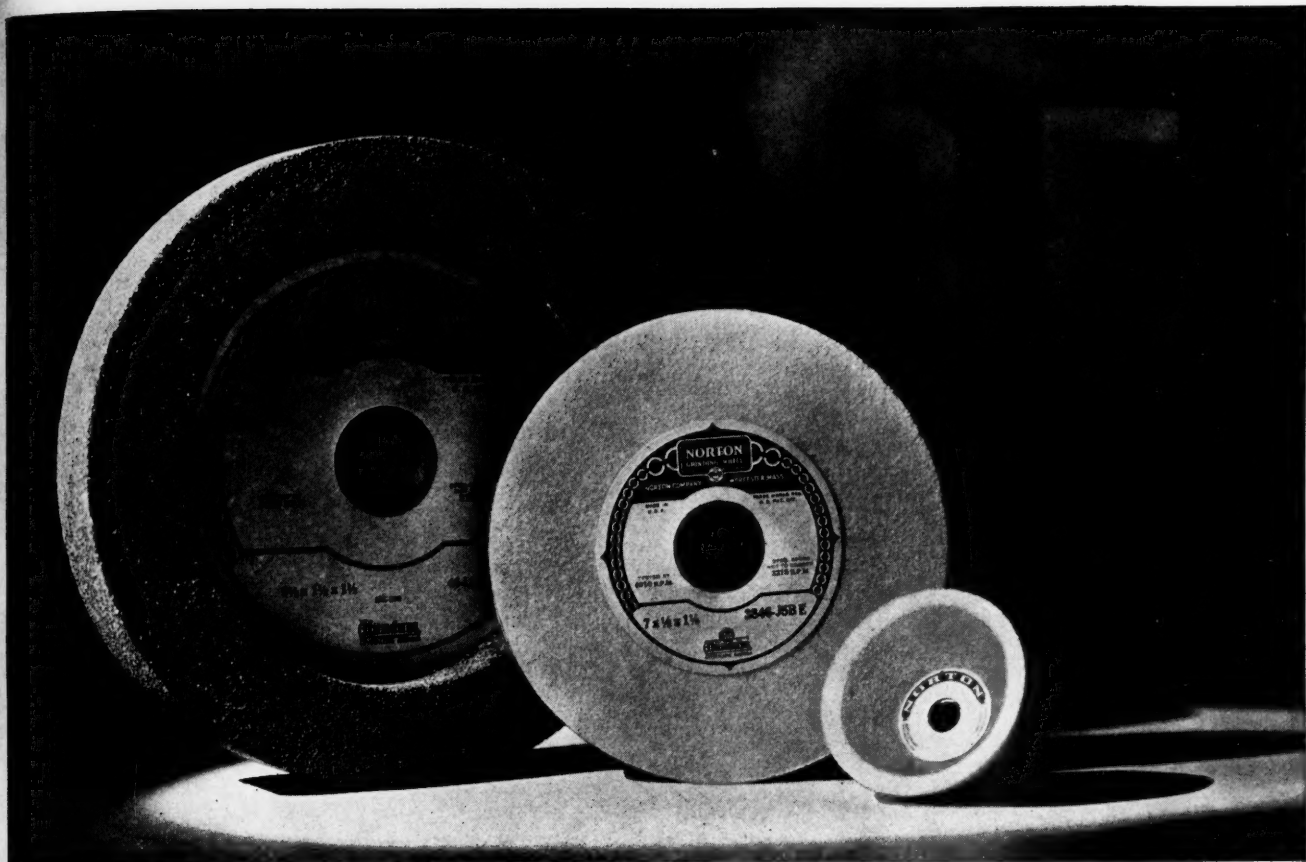
CONSHOHOCKEN, PA.

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Invention of Alundum Abrasive (improved wheel uniformity)

Invention of 38 Alundum Abrasive (red wheels)

Invention of "B" Bond (white wheels)

Invention of Controlled Structure (better duplication)

NOW~

The NORTON "BE" BOND WHEEL

We suggest that you try this new Norton tool wheel

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New York	Chicago	Detroit	Philadelphia	Pittsburgh
Hartford	Cleveland	Hamilton, Ont.	London	Paris
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NORTON ABRASIVES

JULY NINETEEN THIRTY-SIX

Hydraulic Turbines

•

Francis and High Speed Runners

• •

Penstocks—Butterfly Valves—
Power Operated Rack Rakes
—Gates and Gate Hoists
—Electrically Welded Racks

• • •

Newport News Shipbuilding and Dry Dock Co.

(Hydraulic Turbine Division)

90 Broad Street, New York, N. Y.

Newport News, Virginia

Gulf Lubcote .. **THE QUALITY LUBRICANT FOR**

Wire Rope

*Destruction Test Under
Pulsating Load*



**INDUSTRIAL
LUBRICATION**

Many plant operators report that *Gulf Lubcote* has more than doubled the life of wire rope

NOW YOU can use a petroleum product which will greatly increase the service life of wire rope—Gulf Lubcote.

This product has been developed after exhaustive experiments to determine the best type of lubricant to give wire rope lasting strength under continual stressing and slackening. It is made in six grades to meet every operating condition.

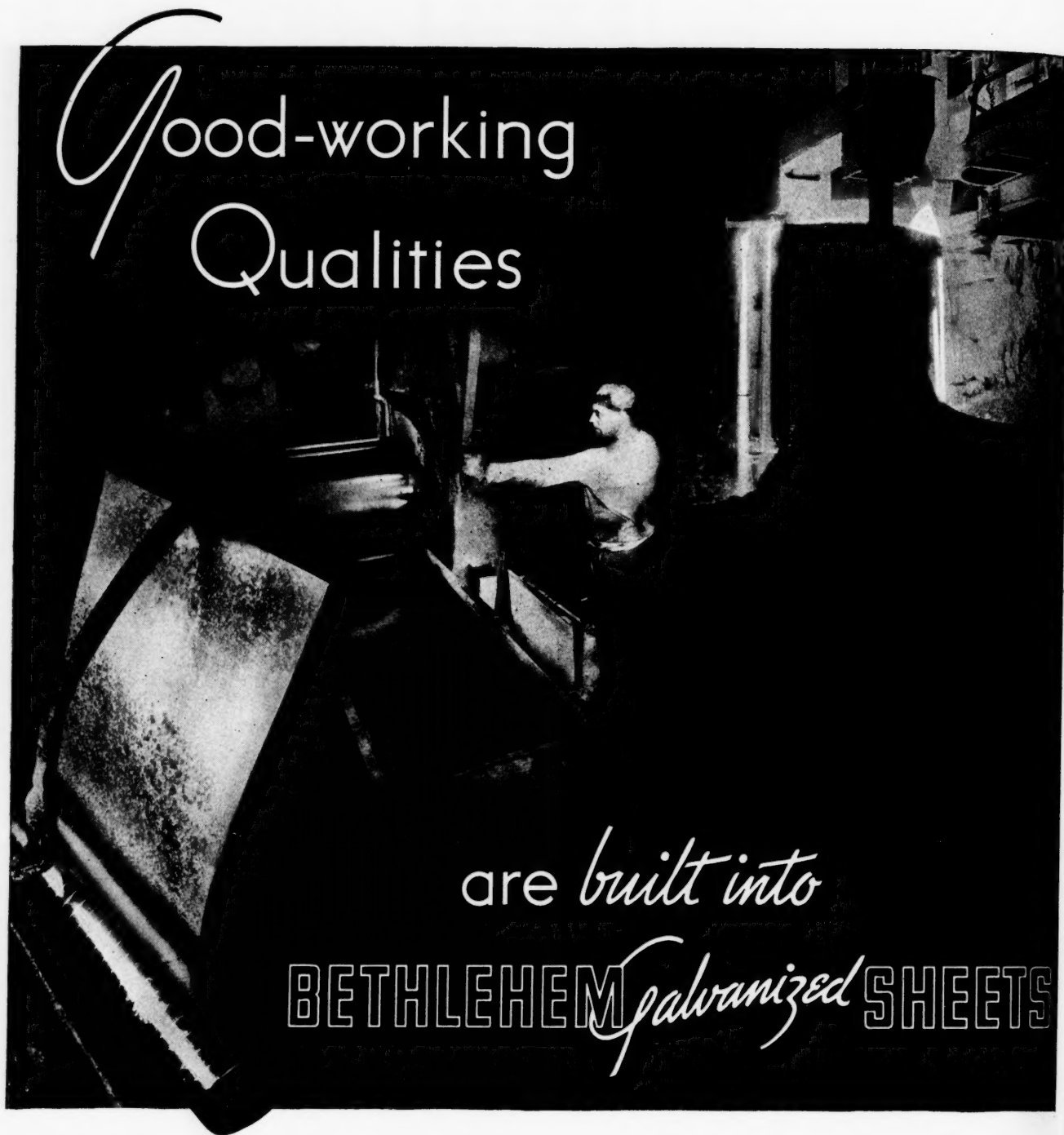
Many industrial plants are putting Gulf Lubcote to work, with excellent results. Ask the Gulf representative how the use of Gulf Lubcote can save you money.

In Gulf's modern research laboratory wire rope is tested in the pulsating tensile testing apparatus shown above. Thus, Gulf scientists get first-hand knowledge of causes of cable failure and how to improve its resistance to fatigue by the proper use and application of the correct grade of Gulf Lubcote.

GULF OIL CORPORATION—GULF REFINING COMPANY
GENERAL OFFICES, GULF BLDG., PITTSBURGH, PA.

Makers of That Good Gulf Gasoline and Gulfube Motor Oil

JULY NINETEEN THIRTY-SIX



Good-working
Qualities

are built into

BETHLEHEM *galvanized* SHEETS

PUTTING the good working qualities into Bethlehem Galvanized Sheets is a process that proceeds step by step—just as a construction job does. They are easy to bend and fabricate because the properties that make them so are literally built into them. From the melting of the steel to final inspection each operation is controlled with an eye to its effect on forming qualities.

It is for this reason Bethlehem Galvanized Sheets are so economical for duct work or other fabricated uses. They stand up to double-seaming at elbow bends with-

out cracking. Seams are smooth and uniform. Their tight galvanizing doesn't flake or peel off.

And for rust-exposed applications, sheets of Beth-Cu-Loy *copper-bearing* composition are similarly dependable, make possible the same desirable combination of low fabricating costs and a first-class installation. The copper content in Beth-Cu-Loy Sheets adds little to their cost. But disinterested tests have indicated that it increases their resistance to rust by from two to two and one-half times.

BETHLEHEM STEEL COMPANY



DU PONT ELECTRIC BLASTING CAPS

Insure Complete Detonation of Your Shots

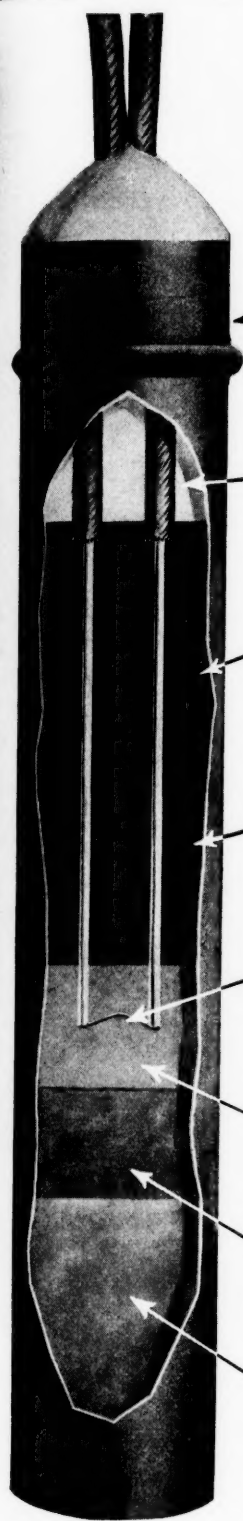
MONEY and time are required to prepare a shot. Don't risk losing both. Use an electric blasting cap that insures a complete detonation.

Du Pont Electric Blasting Caps are precision-built and sturdily constructed to withstand handling in use and transportation; long storage, and submersion in water. They are the world's largest-selling electric blasting caps. More than Nine Hundred Million have been used in the past twenty-five years.

E. I. DU PONT DE NEMOURS & CO., INC.
EXPLOSIVES DEPARTMENT, WILMINGTON, DEL.

BRANCH OFFICES: Birmingham, Ala.; Boston, Mass.; Chicago, Ill.; Denver, Colo.; Duluth, Minn.; Huntington, W. Va.; Joplin, Mo.; Juneau, Alaska; Kansas City, Mo.; New York, N. Y.; Pittsburgh, Pa.; Portland, Ore.; Pottsville, Pa.; St. Louis, Mo.; San Francisco, Calif.; Scranton, Pa.; Seattle, Wash.; Spokane, Wash.; Springfield, Ill.; Wilkes-Barre, Pa.

CROSS SECTION SHOWING STURDY, DEPENDABLE CONSTRUCTION



COPPER SHELL

Carefully annealed to prevent cracks. Dipped in lacquer before loading for detection of "pin holes."

SULPHUR SEAL

Specially compounded sulphur. Will not corrode copper nor eat insulation on leg wires.

WATERPROOFING

Efficient waterproof compound. Sticks to shell and leg wires, thus preventing moisture from creeping along leg wires and shell. Will not shrink in cold.

PLUG

Holds leg wires precise distance apart, relieving possible strain on bridge wire.

BRIDGE WIRE

Amazing example of precision manufacture. *Fifteen ten-thousandths* of an inch in diameter. Composed of four alloys to give right resistance to assure positive, dependable detonation.

IGNITION CHARGE

Ignites when bridge wire fuses. Will not corrode bridge wire, soldered joints or leg wires.

PRIMING CHARGE

Dense, powerful explosive that insures detonation of base charge at maximum velocity.

BASE CHARGE

Detonates at highest velocity of any commercial explosive.



EXPLOSIVES

and Blasting Accessories

JULY NINETEEN THIRTY-SIX



ALL HONOR TO SHARP PENCILS

WHEN A MAN makes a revolutionary discovery which presents to industry a totally new common metal, he may be pardoned for visionary dreams of an easy path to fame and fortune.

Certainly this was the expectation of Charles Martin Hall, the 22-year old woodshed experimenter who, in 1886, discovered the commercial process whereby Aluminum could be produced economically.

But Hall and his venturesome backers of fifty years ago made little progress in creating an Aluminum industry until they grappled with the realities of the sharp pencils of commerce: the calculating pencil of the engineer, the challenging pencil of the architect and the designer, the close-figuring pencil of the purchasing agent.

It was because of the challenge of these sharp pencils, in the hands of customers and competitors, that the pioneer makers of Aluminum (originally the Pittsburgh Reduction Company, now Aluminum Company of America) eventually found themselves part of a thriving new industry.

The obligation of a business to its customers is obvious. But this business owes quite as great a debt to its competitors.

The keen competition offered by the many fabricators within the Aluminum industry has not

only stimulated our own efforts, but has also spread the gospel of Aluminum faster than any one organization could possibly have done.

To the producers of other basic materials and metals also belongs a generous measure of credit for the progress of the young industry. Their honest competition speeded the search for cheaper methods of Aluminum production and fabrication, and the development of new strong alloys. Their well-earned position in many fields has forced Aluminum to create new markets for itself, thus serving its own best interests as well as the general economic good.

After all, is there any real conflict between the basic metals and materials? Is not the actual conflict with natural forces — against gravity, in the matter of weight; against inertia as affecting mass-in-motion; against corrosion and harmful chemical action; against stresses and other created forces?

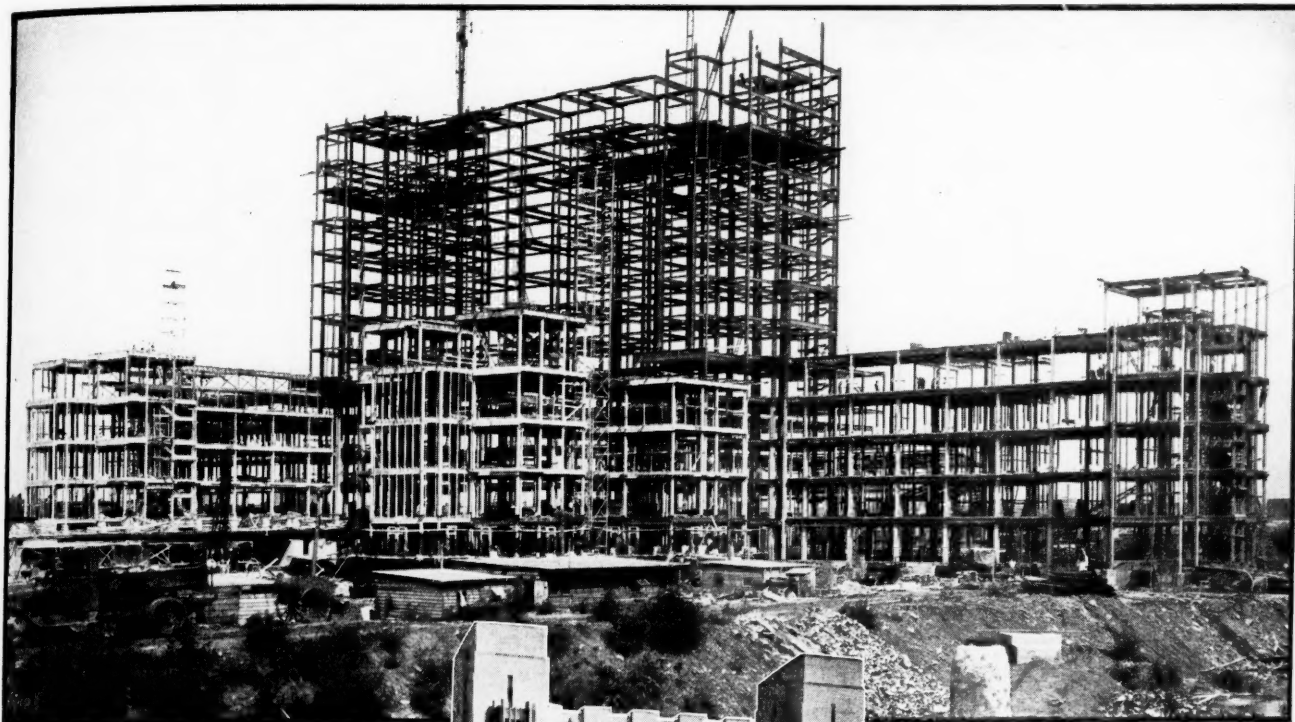
These natural forces the Aluminum industry regards as its real competition. In the fullness of time every basic material will find its own natural and intended place in the economic scheme of things.

Meanwhile, Aluminum asks to be looked upon as a friendly metal, ready to go to work in effective partnership with other metals and materials wherever and however the sharp pencils of commerce figure that human welfare can best be served.

A FIFTIETH ANNIVERSARY MESSAGE FROM

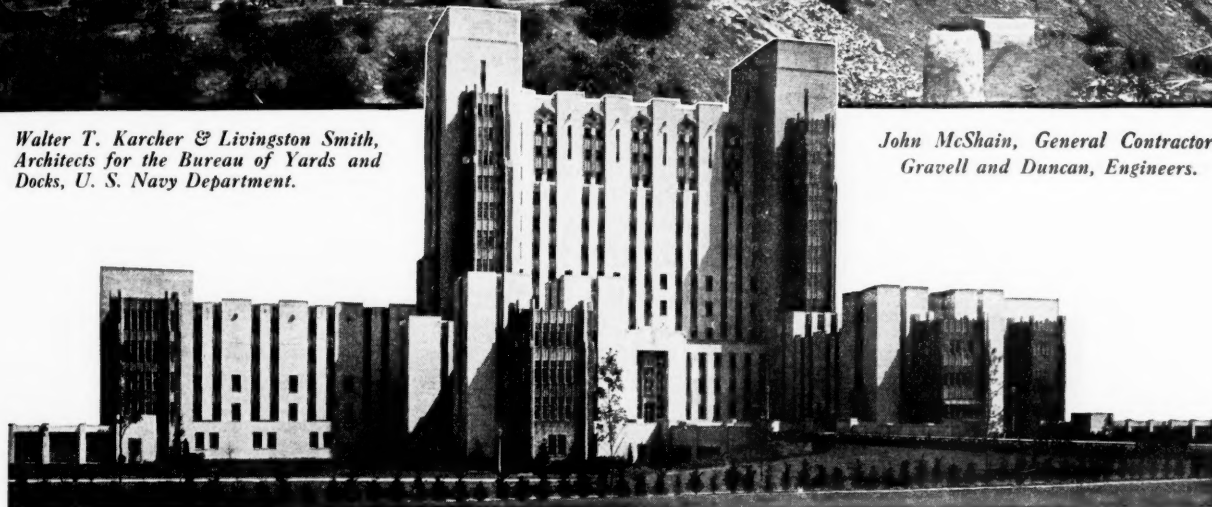
ALUMINUM COMPANY OF AMERICA
MANUFACTURERS RECORD FOR

UNITED STATES NAVAL HOSPITAL at Philadelphia, Pa.



*Walter T. Karcher & Livingston Smith,
Architects for the Bureau of Yards and
Docks, U. S. Navy Department.*

*John McShain, General Contractors
Gravell and Duncan, Engineers.*



A GROUP of buildings architecturally imposing in the vertical lines as stressed by the solids and voids of the design and further emphasized in the vertical treatment of the window openings. All structural steelwork was fabricated by American Bridge Company from rolled structural shapes sup-

plied by Carnegie-Illinois Steel Corp. American Bridge Company's facilities for fabrication and erection, backed by service organized to cope with any demand, are available in any requirement for structural steel . . . buildings, bridges, barges, towers or steel construction for any purpose whatever.

AMERICAN BRIDGE COMPANY, Pittsburgh
• CARNEGIE-ILLINOIS STEEL CORPORATION, Pittsburgh and Chicago. • TENNESSEE COAL, IRON & RAILROAD COMPANY, Birmingham.

Pacific Coast Distributors: Columbia Steel Company, San Francisco, Export Distributors: United States Steel Products Company, New York.



UNITED STATES STEEL

SEVENTY years before our Company was organized a cast iron water main was laid in the Greenwich Village section of New York City. This 105-year old main is still in service and in excellent condition. We have 35 years experience in perfecting and producing cast iron pipe; one of the finest foundry laboratories extant; and exceptional facilities for pipe manufacture and service. But the most important thing we have to offer is the native high resistance to corrosion of good gray iron.



*Super-de Lavaud Centrifugal
Cast Iron Pipe*

U. S. Pit Cast Pipe

U. S. Mechanical Joint Pipe

U. S. Ni-Resist Cast Iron Pipe

U.S. cast iron PIPE

Cast iron and alloy cast iron pipe centrifugally or pit cast—for water works, gas, sewerage and drainage service as well as industrial uses involving corrosives.

U. S. PIPE & FOUNDRY CO.
BURLINGTON, NEW JERSEY

Foundries and Sales Offices throughout the U. S.

U. S. Threaded Cast Iron Pipe

U. S. Flexible Joint Pipe

Alloy and Gray Iron Castings

U. S. Cast Iron Culverts

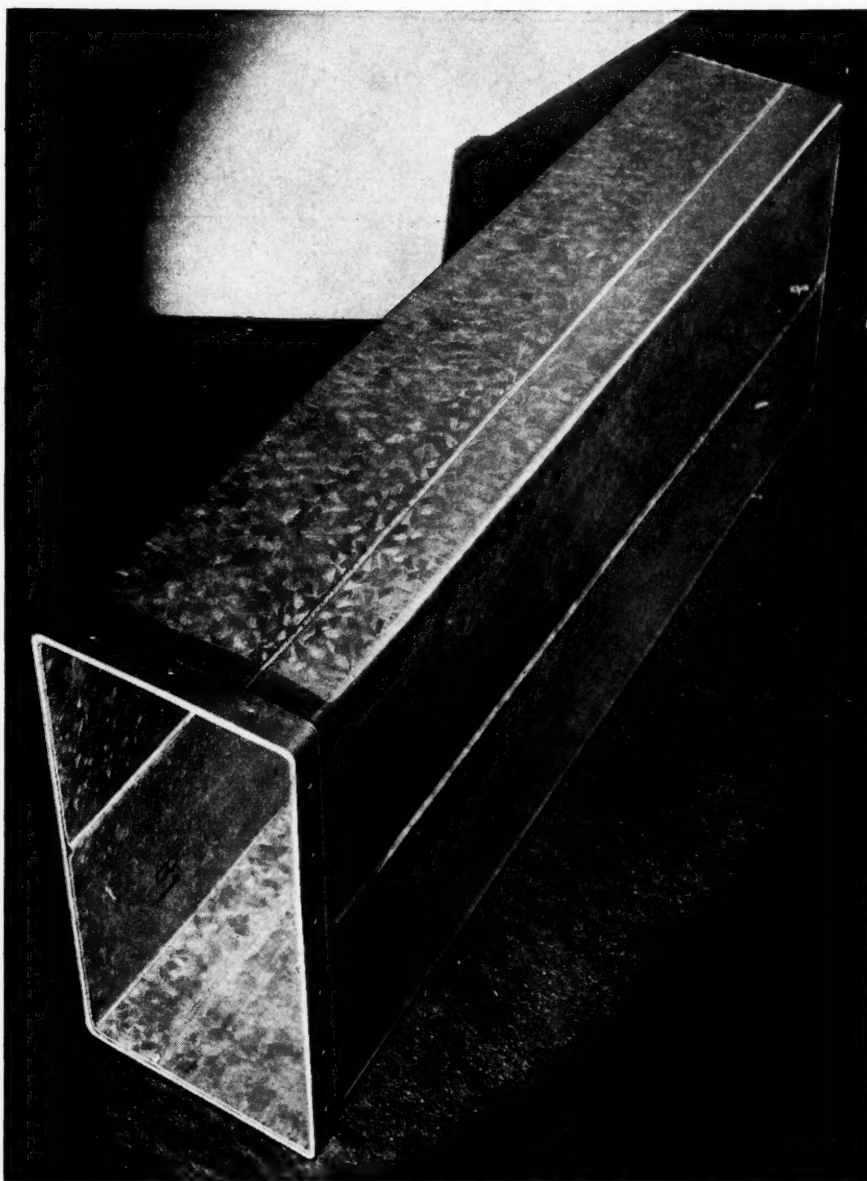
U. S. Cast Iron Roof Plates

You'll get *better* results from these *better sheets*

QUALITY in Black and Galvanized Steel Sheets is important to the fabricator because dependable sheets have better working qualities. And quality in steel sheets goes even beyond the fabricator. Products made from fine, uniform, well made steel sheets last much longer . . . give better service.

United States Steel Corporation Subsidiaries have maintained a record for producing superior Black and Galvanized sheets for over half a century. In their hundreds of applications these steel sheets have proved themselves to be highly economical time after time. These sheets are clearly branded, which means they have passed rigid examination and are of prime quality, accurate in gauge, weight and coating.

When you need Black or Galvanized steel sheets for construction or fabrication, be sure to specify American Sheets made by United States Steel Subsidiaries. Our metallurgists will be glad to discuss your metal needs with you and advise you which of the many grades of steel sheets available will best suit your purpose.



AMERICAN *Black and Galvanized* SHEETS

CARNEGIE-ILLINOIS STEEL CORPORATION, *Pittsburgh and Chicago*

With which has been consolidated American Sheet and Tin Plate Company

TENNESSEE COAL, IRON & RAILROAD COMPANY, *Birmingham, Alabama*

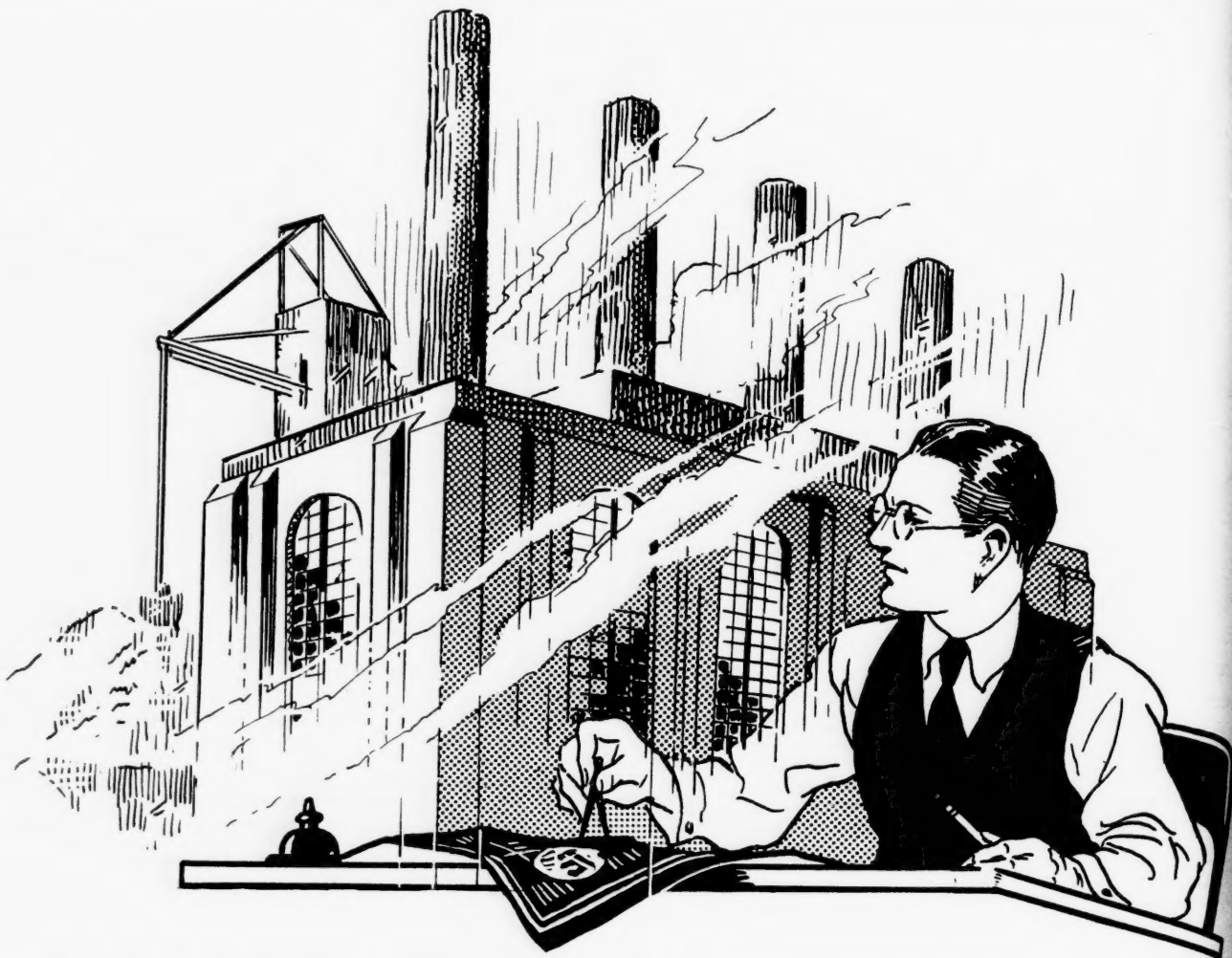
COLUMBIA STEEL COMPANY, *San Francisco, California*

Columbia Steel Company, San Francisco, *Pacific Coast Distributors*



United States Steel Products Company, New York, *Export Distributors*

UNITED STATES STEEL



THERE'S WORK TO BE DONE!

"The utility industry alone could employ tens of thousands of additional men in construction and other activities if it were freed from the unreasonable provisions of the Public Utility Act of 1935, the threat of subsidized competition and the constant assault of federal commissions and administrators."

—President Wendell L. Willkie
1935 Annual Report to Stockholders

This industry, under normal conditions, could be one of the country's leaders in contributing to industrial recovery, commercial activity, employment, and community well-being.

That the industry cannot do so is due not to the industry's own policies, but to the external imposition of destructive legislation, "death sentences," crippling regulation, and unfair, tax-subsidized competition. The effect of these demoralizing governmental policies reaches beyond the utilities, does more than cripple RESPONSIBLE, EXPERI-

ENCED management . . . it threatens local regulation; it dries up state and local tax revenues; it is destroying values in invested savings; and it strikes at the very roots of stable employment.

These are vital elements of public welfare. There is work to be done! The utilities want to go forward, expand their interrupted program of progressive development. If freed from governmental interference, they are prepared to proceed in accomplishing definite public benefits.

THE COMMONWEALTH & SOUTHERN CORPORATION

MICHIGAN · OHIO · ILLINOIS · INDIANA · PENNSYLVANIA · GEORGIA · FLORIDA · MISSISSIPPI · SO. CAROLINA · ALABAMA · TENNESSEE



INDUSTRY'S TREK SOUTH

It's Paper Now!

The South's advantages for the manufacture of pulp and paper have been discussed often in the MANUFACTURERS RECORD. Briefly, these advantages lie in:

- (1) A vast supply of cheap pulpwood, mild climate, quick growth of trees insuring perpetuity of wood supply.
- (2) Nearby sources of lime, sulphur and other chemicals and materials entering into paper manufacture.
- (3) Favorable labor conditions.
- (4) Proximity to markets.

The United States is spending between \$150,000,000 and \$200,000,000 every year for foreign pulp and paper, the production of which would furnish many thousands with profitable employment and provide markets for a portion of our vast supply of wood now going to waste in the South.

Construction of three proposed paper mills for which plans and specifications are now under way and of a like number of mills under construction in the South call for an aggregate investment exceeding \$30,000,000.

The mills will draw upon millions of acres of timberlands, leased or company-owned or tracts "cut" by farmer-owners within 100 to 150 miles radius of the respective mills.

For fifty-four years, the MANUFACTURERS RECORD has maintained a definite objective in centering its attention on the development of industries in the South based on available raw materials, power resources, favorable climate, abundant intelligent labor and transportation facilities.

Each month it unfolds a story of industrial romance and accomplishments offering varied opportunities for the manufacturer, the industrialist, investor; and for the sale of a wide variety of products.

MANUFACTURERS RECORD

Published Monthly
BALTIMORE, MD.

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• Manufacturers Record •

"TAXATION WITHOUT REPRESENTATION -"

GOVERNMENT spending in recent years has exceeded all conceivable proportions. During the last four years alone Federal Congresses have appropriated 40 per cent more than the entire sum needed to run our Government for the first 124 years of our history.

From 1789 until 1913 our Government spent a total of 24 billion dollars. The last four years two Congresses have appropriated that much and nearly 10 billion dollars more.

This year's expenditures are 170 per cent more than the average annual Government expenditure of the 1920's.

At the present time the cost of government is approaching the rate of 9 billion dollars a year, as compared with 1.6 billions per year at the beginning of this century, a gain of nearly six-fold, while our national income now is only three times what it was in 1900.

It is conservatively estimated that by 1950 our present tax bill will be doubled, unless there is inflation or further repudiation of public debt. This estimate is reached without attempting to include the estimated cost of social security and unemployment measures, which is calculated to reach eventually 2½ billion dollars a year.

It is difficult to believe that the increase in the cost of running our Government, as shown by the figures stated, is the wish of the people. It is hard to find any man who wants to pay more taxes, and the practice of living beyond our income has never been approved in private life, in business, or in government.

If the vast increase in Government expenditures is not the deliberate wish of the electorate, our tax bill has been levied without effective representation. That seems to be the case. Congress has yielded to pressure in every direction and in too many cases has written large checks on the public treasury for the use of minority groups composed of administration appointees, many of whom never ran for an election in their lives.

The present administration came into power on a platform of rigid economy, pledged to reduce government expenditures already judged excessive, in the interest of strengthening the country's financial posi-

tion and of eliminating useless or impractical governmental bureaus.

The only way the 1932 presidential vote can be intelligently interpreted is that it was a protest against conditions which the New Deal only succeeded in aggravating to the point where they now seriously threaten our national well being and impose a tax burden that is well nigh unbearable.

It is impossible to reconcile the idea of representative government with the record of Federal appropriations the last four years in what seems to thoughtful, conservative men a lust for seeing how much money could be spent, in every conceivable way from "boondoggling" to projects for getting power from the moon, like Passamaquoddy Dam—nightmares from the minds of impractical men.

The extent to which tax abuses may be carried in levy as well as distribution is being subtly yet well defined, disclosing disturbing actualities and far more serious possibilities.

We are learning that taxes may be levied not only to provide revenue to meet expenses of government, but to force acceptance of new principles in government, to experiment in economics, and to purchase a stronger hold on political office. The right of government to do these things without a specific mandate from the people, which as yet has not been given, may well be questioned.

Is it the proper function of democratic government to force distribution of wealth, as planned in the latest tax law directed against the accumulation of corporation surplus, and again in the use of public funds to subsidize agriculture, and to establish enterprises in direct competition with private industry?

The situation has been brought about by the failure of our elected representatives to withstand pressure of certain well organized groups, as well as their desire to curry favor in their party and to attract votes on the false ground of ingloriously "soaking the rich" for the benefit of the "downtrodden."

Government spending must be curbed. Without proper control of the size of our tax bill the fruits of our industry are worse than wasted, and our Declaration of Independence is a mockery, with a return to the political tyranny it abolished inevitable.

INDEPENDENCE

IN an emotional appeal, President Roosevelt in his acceptance speech in Philadelphia sought approval of the New Deal—a New Deal which will be placed before the country as an issue for the first time in November, although for the past four years it has overshadowed the actions of every individual citizen.

The President compared conditions as they were in 1776 with those of today, and perhaps not ineptly, for he raises the very pertinent question of whether we are not now confronted with too much power in government, too far removed from the people.

In 1776, this country declared itself to be independent of foreign rule, and since then our independence, as a nation and as individuals, has been a measure of American success. It is a fair question, therefore, to ask how life under the New Deal conforms to that standard.

For example, are farmers more independent when they are told what crops they may plant; how many acres they may put in cultivation, and at what prices their produce may be sold?

Are business men more independent when they are directed to distribute their earned surplus, in the face of any plans they may have to build up a reserve for depression times or for business expansion? This, even though their surplus is not necessarily in cash, but may reflect the estimated value of physical property which can only be liquidated at a loss and with unending detriment to the business.

Are proposed recipients of old age pensions and unemployment insurance more independent by virtue of public charity?

And, above all, is the working man more independent when employed by a corporation subject to government control; or when he is forced to bargain with his employers by ways of government's choosing; or when he is told how many hours he may work; or when his pay envelope is taxed, without any choice on his part, to provide uncertain benefits in his old age?

The sinister part of the New Deal is that it has over-emphasized in a program of reform many weaknesses in our economic structure which were already being solved by industry. In so doing it has created a class feeling between employer and employee and is attempting to fan it into bitter warfare which may well get out of hand and indefinitely postpone the return to business recovery already started.

Independence has always meant freedom from control and regulation—and paternalism in government cannot solve our problems.

TIMBER GROWTH

IT will be a surprise to many to learn that the United States timber growth exceeds our timber consumption. We are not cutting off our forests faster than they are being replaced and there will always be sufficient forest in the United States to meet all reasonable needs, according to P. A. Hayward, chief of the Forest Products Division of the Department of Commerce.

The erroneous impression that we are using up our timber resources has done much damage in reducing demand for materials of wood and searching for substitutes, on the mistaken assumption that timber supply was rapidly being exhausted. The immediate and pressing problem, Mr. Hayward points out, is that of expansion of markets for forest products, and as timber is a reproducible natural resource, it should be considered as a crop. Unless it can be utilized, the crop ceases to be an important asset.

In a recent report of the Industries Studies Section of the NRA, the following excerpt is of interest:

"Considering the entire commercial forest area without regard to the ultimate use or form of its products and assuming no increase in current annual growth, it is estimated that the heavy 1925-29 drain on all forest products can be maintained without total depletion for 65 years . . . It is estimated that growth will exceed drain to such a degree that a perpetual supply of forest products at the 1925-29 drain will be available even with a substantial increase in consumption."

Considering the saw timber area, a 35 years' supply of saw timber is available, and allowing for increased growth there is a sufficient supply for 49 years at the 1925-29 high rate of consumption. This, of course, is based on the assumption that no more timber areas will be developed. Through greater forestation, more selective cutting, and better fire prevention practices, an adequate lumber supply can be assured for the future.

As is shown in the 1936 *Blue Book of Southern Progress*, the South with 38 per cent of the commercial forest area of the country produces 43 per cent of the domestic lumber output. Not only does the South have the greatest forest area in the nation, but its timber species due to favorable climate have a rapid growth. This accounts for the fact that after 50 years of saw milling there is a great amount of pine timber in the South, estimated at approximately 200,000,000-000 board feet. Furthermore, Southern forests produce 58 per cent of the saw timber growth each year in the United States.

Selective cutting, reforestation and fire prevention methods now being widely practiced in the South are the trends in making timber a crop and in establishing a perpetual supply of forest products.

LABOR UNREST

ACCOUNTS of possible impending labor trouble, as a result of a "bloodless drive" to unionize 500,000 workers in the steel industry, are disturbing to business at a time of widespread strikes abroad and when there is reason to hope for continued substantial improvement toward lasting recovery.

The warning of growing unrest in this country came on the heels of the President's Philadelphia speech in which business men were assailed as "economic royalists" and "privileged princes, thirsting for power."

The attitude of the present administration toward the employer-employee relationship in American business has created an issue which did not exist before it came into power, and at best has not been conducive to labor peace. On the whole it has been a bitter class appeal, not warranted by labor conditions in this country which have raised the workingman from a state of peasantry to one affording most of the comforts and advantages of modern living. It can be justified only on the ground of mass emotional appeal for political reasons.

Ever since Section 7-A was written into the Recovery Act, certain minority groups have attempted to unionize all workers into one organization having no legal responsibility, having few standards of workmanship, and with no apparent purpose other than that of gaining power, using the argument that their activities are endorsed and supported by the Federal government of the United States. This in spite of the fact that there was very little voluntary disposition on the part of a large majority of workers to enlist in a movement of this kind.

The present drive to unionize the steel industry is made in spite of an overwhelming rebuff given by the steel workers themselves in 1934 when, in an election in 41 plants covering practically all major steel companies, a convincing majority of 193,362 ballots, out of a total of 214,561 employees eligible and available to vote, were cast in favor of employee representation plans for collective bargaining instead of a national union.

At that time the MANUFACTURERS RECORD said: "The result of the election confirms the position of the steel industry that strike talk by labor agitators is not supported by the vast majority of the workers" and "that the effort of organized labor to force its control over the steel industry, as well as all industries, and make the 'union closed shop' supreme in America by denying work to any one who seeks employment without paying tribute to organized labor, is against the principles of democracy that guarantee human freedom."

The administration's labor policy, as expressed in the Wagner-Connery Labor Relations Act, has been declared unconstitutional by the United States Circuit Court of Appeals at New Orleans in a case involving the Jones and Laughlin Steel Company, but in spite of that decision the Government brought pressure to enforce its policy by the punitive measure of can-

celling contracts with Jones and Laughlin amounting to \$40,000.

The length to which labor agitators will go in attempts not at all representative of the feeling of the working population, was well illustrated in the San Francisco strike. It was also shown, by the prompt resentment of San Francisco people, that America will not temporize with attempts to overthrow its institutions.

"Economic royalists" in this country are, in by far the majority of cases, men who came up from the ranks, who know the problems of the workingman better than any other group. Having found success themselves they are also better able to solve the workingman's problems and to help him improve his lot. Unlike the college professor, they speak his language.

Our "privileged princes" earned their rank the hard way, working up from the bottom of the ladder by using their brains as well as brawn. Their privileges are those of accomplishment, given and received in the spirit which makes America a land of opportunity.

This is no time to foment unrest; nor to fan a fire of class feeling which would not burn unaided. There is too much work to be done.

WHY THE SOUTH?

THE MANUFACTURERS RECORD searches and weighs the South without ceasing. Why?

Because large-scale, permanent, industrial expansion proceeds constantly throughout this section which forms such a vital part of the Country and which has natural resources practically limitless and of greater value than any other section.

Business men study, analyze and compare the South. Why?

Because the South is a region of rich, varied investment opportunities, and a big growing market for all industrial products. It both buys and sells. The fact that it sells on a large scale is often obscured by the emphasis given its tremendous buying power. The extent of both of these currents in the business stream is indicated clearly and concisely in the 1936 *Blue Book of Southern Progress* just off the press.

So, if you want to buy or sell, consider the South; if you want to invest profitably and permanently, consider the South.

All of the capital of the Country is not idle. Millions have been invested in Southern industry during the past year in the face of so-called investment timidity. Why such courage and confidence?

In this year's *Blue Book* there is an impressive list of "new plants and expansions" as indicative of some of the major manufacturing and engineering projects of 1935. Fourteen of these plants cost \$1,000,000 or over. Some as much as \$5,000,000. The forward movement of the South can not be halted. Even a benumbing depression did not stop it.

SOUTH'S \$11,000,000,000 BUYING POWER

THE aggregate output of the South's factories, mines and farms will approximate \$11,000,000,000 this year.

A gain in excess of 63 per cent in the South's productive power during the past 25 years compares with a 33 per cent increase for the rest of the country.

These facts, indicating the magnitude of the accomplishments of Southern business, facilitated by a fertile soil and vast mineral resources, are based on figures presented in the 1936 BLUE BOOK OF SOUTHERN PROGRESS, now available for distribution by the MANUFACTURERS RECORD.

Universally, the South is looked upon as a great agricultural region, and rightly so. It annually produces about 40 per cent of the crop values of the United States. It has about one-third of the area and population of the nation. It has a farm population of 18,062,000 out of a total population of 44,267,000. But the South is an industrial empire, in which the expansion of manufacturing and mining facilities in recent years and currently under way is setting the pace for the nation.

The estimated gross value of the South's crops and livestock products in 1935 of \$3,225,000,000 compares with a factory output of more than \$6,500,000,000 and with a production of the mines, oil wells and quarries totaling more than \$1,350,000,000.

Rapidly forging ahead in manufacturing and mining, the South today is producing about 35 per cent of the national output in these lines 25 years ago, when this nation was recognized for its industrial supremacy.

More than 43 per cent of the country's minerals are annually produced in the South. It has or is capable of pro-

ducing 70 essential minerals. It is the leading producer, or supplies a high percentage of about 40 minerals mined in the United States.

The South annually produces:

100% of the country's bauxite.
100% of the country's barite.
99% of the country's phosphate.
99% of the country's sulphur.
83% of the country's fuller's earth.
70% of the country's natural gas.
65% of the country's petroleum.
60% of the country's feldspar.
60% of the country's marble.
55% of the country's fluorspar.
50% of the country's aluminum.
43% of the country's clay.
41% of the country's coal.
40% of the country's granite.
37% of the country's lead.
34% of the country's lime.
20% of the country's stone.
10% of the country's iron ore.

In manufacturing, the South has increased its output during the past 25 years by more than 94 per cent as compared with an increase of 45 per cent in the rest of the country.

As the dominant textile producing region, 75 per cent of the cotton mill operation is in the South. It has 70 per cent of the nation's rayon making capacity.

ON 38 per cent of the nation's forest area, the South produces 43 per cent of the lumber turned

out annually by the nation's mills. Over 60 per cent of the world's naval stores output is from Southern plants.

Of commercial fertilizer the South produces over 70 per cent of the country's total. More than 90 per cent of the cigarettes are made in Southern plants.

The South is fast becoming the center of the nation's chemical industry, the concentration in this territory of paper-making, alkali and oil refining enterprises featuring recent and current activities. More than \$40,000,000 is being invested in pulp and paper mills under way and projected in the South. Large sums in the aggregate are being put into modernizing oil refineries and in building new units. Besides, heavy investments are being made in a long, diversified list of chemical enterprises that dot the territory from Maryland to Texas.

Industrial expansion even during the low point of the depression was continued in substantial volume, as shown by awards last year of more than \$136,000,000 for privately financed plants, representing an increase of 72 per cent over each of the two preceding years. During the first half of 1936, industrial plant awards run to \$125,000,000.

Agricultural diversification and decentralization of industry, making steady progress throughout the South, are recognized as two major trends in building a sustained prosperity for this section. As the South's great cotton industry affords raiment, shelter, food and by-products that enter an ever-lengthening list of uses from soap, dyestuffs and varnish to explosives and plastics, so other developments through

Annual Productive Power Of The South

(Compiled from 1936 Blue Book of Southern Progress)

States	Manufactured Output*	Mining Production†	Agricultural Output‡	Total Value
Alabama	\$253,211,000	\$29,827,000	\$194,200,000	\$477,238,000
Arkansas	81,105,000	16,082,000	152,500,000	249,687,000
District of Columbia	61,284,000	407,000		61,691,000
Florida	116,280,000	11,584,000	109,300,000	237,164,000
Georgia	386,211,000	6,365,000	232,000,000	624,576,000
Kentucky	297,808,000	89,042,000	196,100,000	582,950,000
Louisiana	312,175,000	85,211,000	133,700,000	531,086,000
Maryland	518,708,000	10,128,000	84,600,000	613,436,000
Mississippi	72,548,000	2,521,000	192,200,000	267,269,000
Missouri	881,184,000	32,955,000	283,400,000	1,197,539,000
North Carolina	877,853,000	5,342,000	337,700,000	1,220,895,000
Oklahoma	191,414,000	237,209,000	188,800,000	617,423,000
South Carolina	257,344,000	1,323,000	146,300,000	404,967,000
Tennessee	357,028,000	23,526,000	176,600,000	557,154,000
Texas	686,752,000	509,521,000	543,800,000	1,740,073,000
Virginia	509,196,000	28,309,000	184,100,000	721,605,000
West Virginia	262,467,000	241,474,000	70,500,000	574,441,000
Total South	\$6,122,568,000	\$1,330,826,000	\$3,225,800,000	\$10,679,194,000
Rest of Country	\$25,236,272,000	\$1,721,442,000	\$5,907,723,000	\$32,865,437,000
United States	\$31,358,840,000	\$3,052,268,000	\$9,133,523,000	\$43,544,631,000

*Census 1933. †1934. ‡Estimated gross value crops and livestock products 1935.

scientific research in the utilization of industrial crops that can be grown in abundance in the South are adding to its wealth and creating new opportunities for employment of labor.

The possibilities are unlimited for further development in the whole Southern territory through the conversion of farm crops and agricultural products generally into industrial materials. This, with its established indus-

tries utilizing products of the forests, farms, mines, and even the recovery of valuable chemicals from the air, promises a well-rounded development to clinch the South's position as the manufacturing center of the country.

In the foregoing are cited some of the outstanding facts about the economic power of the South that can be obtained from the 1936 BLUE BOOK OF SOUTHERN PROGRESS, a con-

venient statistical reference book and market guide. Under its general classifications—manufacturing, mining and minerals, agricultural, power, general construction, railroads, highways, airways, foreign trade, banking, life insurance, etc.—are given basic comparable figures for business men, investors, prospective settlers, and students who are seeking factual information about the South and its resources.

\$50,000,000 IN NEW CHEMURGIC INDUSTRIES

South Leads in Movement Through Scientific Research for Greater Utilization of Farm and Forest Products by the Establishment of 7 Pulp and Paper Mills With Aggregate Investment of \$40,000,000

Expanding Markets for Old Industries, Creating New Industries, New Products and By-Products Estimated to Require Timber from 50,000,000 Acres in 10 Years

WITHIN the past year \$50,000,000 of private capital has been invested in new chemurgic industries that use American farm crops for raw materials, according to a survey presented in the first annual progress report of the Farm Chemurgic Council, Dearborn, Mich.

These new industries include:

American pulp and paper mills, power alcohol for motor fuel, vegetable fibre plants, expansion of the plastic industry, new uses for cotton, tung oil development, soybean plastics and oil extraction plants, starch from Southern sweet potatoes and other miscellaneous new products.

These new industries are the products of modern men of science who are teaching progressive men of industry how to separate the ingredients contained in the organic products of the soil and re-combine them in different form for industrial use. The South plays an important role in the forward movement for the utilization of farm and forest products and by-products. It is becoming the center of the chemical manufacturing industry of the country, utilizing its vast mineral and vegetable resources. In cotton, fibre, tung oil, soybean, sweet potato and other primary crops which can be grown in abundance, the South can supply unlimited raw materials.

Since about 60 per cent of all manufacturing is dependent upon forest and farm products, the advance being made in chemurgic development is of particular importance to the South which now supplies 40 per cent of the country's total crop value and more than 43 per cent of the lumber cut and has more than 38 per cent of the country's commercial forest area.

Heading the list of the new industries

in the survey by the Farm Chemurgic Council are seven pulp and paper plants in the South involving an investment of over \$40,000,000 and designed for a combined capacity of about 1500 tons a day.

Six of the mills, as previously announced in the Manufacturers Record, include the Union Bag and Paper Co., Savannah, Ga.; the Crossett mill, Crossett, Ark., the Champion Paper and Fibre Co. pulp mill, Houston, Tex.; the St. Joe Paper Co., Port St. Joe, Fla.; West Virginia Pulp & Paper Co., Charleston, S. C., and the Container Corporation of America, at Fernandina, Fla. The seventh mill is that proposed for Brunswick, Ga.

It is estimated that these seven mills will give full time employment to 5,000 persons working in the mills, and in addition will furnish work throughout the year for 15,000 others in the woods.

Those familiar with the possibilities of this new development, the perpetual supply of rapidly growing pine available, and the economy in operation, forecast this is but the beginning of a vast paper industry in the South. Millions of acres of worn out cotton lands will be re-seeded in pine, permanent progress will be made toward solving the surplus cotton problem, and profitable employment throughout the year will be furnished several thousand men.

The manufacture of domestic newsprint is an inevitable sequel. It is predicted that many Southern newspapers may soon be printed on domestic instead of foreign stock. Over half the pulpwood made into newsprint in American mills is now imported. Over \$170,000,000 is now spent abroad for our pulp and paper needs.

Marked progress has been made in the use of cotton membrane mesh for reinforcing tar roads in secondary highway construction, and experiments looking to its use in airport runways are projected. Work is progressing on cotton reinforced road surfacing with 32 states requesting

6,167,000 square yards of cotton membrane for 575 miles of highways and 89,500 cotton mats.

The plastic industry is making progress in new developments involving the use of both inorganic minerals and organic products from the farm in the manufacture of a wide variety of useful products.

New tung tree plantings have been made in the South, notably in Florida, Mississippi, Georgia and Texas. It is believed that the output of 1,000,000 acres of Southern tung trees can be consumed in this country as rapidly as they reach commercial maturity. This is another American product to enable us to be independent of foreign supply for paint and other industries.

Soybean acreage will be largely increased in 1936.

Progress is also reported in the domestic cultivation and processing of vegetable fibres, such as flax and hemp, for the supply of which this country now relies largely on imports. Ramie is another fibre that has possibilities of development in the South.

Other uses of farm crops are power-alcohol from corn, sugar beets, cull potatoes and artichokes.

To advance the industrial use of American farm products through applied science is largely a matter of research and application. Existing laboratory facilities, both publicly- and privately-owned, will facilitate the task, which in its broadest aspects depends for success on private initiative.

A forecast of what might thus be accomplished in ten years according to the Farm Chemurgic Council follows:

Increase in New Industrial Uses

Project	New acres utilized
Power alcohol	21,000,000
Paper and paper stock	8,000,000
Vegetable fibres	5,000,000
Flaxseed and linseed	3,500,000
Cotton for road construction ...	3,000,000
Plastics (miscellaneous)	5,000,000
Tung oil	1,000,000
Tanning materials	500,000
Soybean oil	500,000
Starch	500,000
Miscellaneous	2,000,000
Total	50,000,000

OUR AMERICAN PLAN WORKS!

By

James S. Thomas,

President, Clarkson College of Technology

RECENTLY reference was made to facts discovered about our American Plan by a commission of Europeans who came here for a study of our plan of doing things. Here are a few of the things they said they discovered:

That 7 per cent of the people in the whole world living in the United States under the American Plan had more purchasing power than all of Europe.

That this little group of people had created and owned more than half the wealth of the world.

That from only 6 per cent of the world's acreage, we harvested more than half the world's foodstuffs.

That 60 per cent of the world's minerals are extracted in America.

That we have half the world's communication facilities.

That we have nearly half the world's railway and electric energy.

That we produce 92 per cent of the world's automobiles.

That 22,000,000 of these automobiles run over 600,000 miles of paved road here in the United States.

That this little 7 per cent of the world's population enjoyed standards of living which enabled them to consume:

Half the world's coffee

Half the world's tin

Half the world's rubber

Three-fourths the world's silk

One-third the world's coal, and

Two-thirds the world's crude oil.

Quite a testimonial coming from a critical study of our American Plan by a commission of Europeans who wanted to know.

But the commission was too scientific to be satisfied with only a materialistic exhibit of the success of the American Plan. The thing which seemed to amaze its members most was, that in 1933 we spent more than 3 billion dollars on education which was, they said, more than was spent on education by all the other countries. They pointed out that today there are 29,500,000 young people attending schools and colleges in this country and that they are taught by a million teachers. Teachers and students together constitute a force of approximately one-fourth of our total population working at this thing we call idealistic culture. This is a very real part of the American Plan. At any rate, nothing like it has ever before happened on this planet!

The commission also asserted that real and practical independence for women was a part of the American Plan. We employ 11 million women and have assimilated in industry and business some 7 million of these since 1900.

The commission also said it found that

this American Plan had produced three times as much wealth as the whole world had been able to produce up to 1776 (about the time the American Plan started), and that it had been so *generally distributed* that the average man here became a *magnet* to attract others from all over the world, especially from Europe. (Where some of our most severe critic-lecturers live.) Anyway, it is true, that the population of this country since the middle of the last century grew, not ten times, but *twenty* times as fast as any population ever grew anywhere else in the world. Something attracted them. The commission thought it was the American Plan.

But it also took a look at what it called, "the common man." It said "the common men" under the American Plan had billions of dollars saved in millions of accounts in savings banks, that they had 65 million life insurance policies, that 60 per cent of the farms were unencumbered,

"America's Key Industry"

Broad Economic Facts Covering Activities in Construction Presented in Department of Commerce Booklet

THE construction volume of the United States reached a peak of over \$12,000,000,000 in 1928. A sharp decline from 1930 to 1933 brought the total down to \$3,500,000,000 in the latter year, with 1934 and 1935 showing a slow but steady revival to where the total in 1935 exceeded \$5,000,000,000. Based on contracts awarded in the opening months of 1936 indications are that this year will show a further increase.

A booklet on "The Construction Industry" including a list of some 600 trade associations in the construction and allied services, and presenting economic facts relating to the activities of this "key" industry of the United States, has been issued by the Department of Commerce. Containing 123 pages, including 37 pages of charts, maps and tables, information on 40 Government agencies active in matters affecting the construction industry is presented and also a summary of 1935-36 projects and plans of the Federal Government in power and irrigation dam construction.

Statistics are presented showing trends in recent years as to annual volume of business in all branches of construction activity, number of employes, costs of materials, and some comments on the manufacturing, wholesaling and retailing of materials used.



James S. Thomas

and that 55 per cent of the urban homes were owned by freeholders.

The members of the commission asked themselves the question, "Why has the American Plan worked so well? How has it wrought these miracles?" And in answer, they made their only mistake. They attributed our success to natural resources and mass production. But other nations have greater natural resources than we possess and we have no patent on mass production. It can be adopted by anyone who can work it. Mass production is a matter of ingenuity, inventive ability, the spirit of cooperation, and a high incentive to work. Always to work, to do a little more than is expected. This has been important in the American Plan.

But there is another reason the commission did not discover. About 1790, a lot of fellows made up their minds they were going to try something new. That they were going to change the relation between the political master and the citizen of the State. They decided they would make the government serve the individual and leave the individual free to express himself in as many ways as possible. It is not the American Plan to turn this around.

The American Plan has worked. The historical evidence is all on its side. Are we ready to junk it for a theoretical plan which never has been actually tried successfully anywhere in the world? Democracy and liberty are the basic elements in the American Plan. Both are being questioned today, especially in certain European countries. The European Plan may be all right for Europe. But the European Plan is not particularly reassuring just now. Besides, the American Plan has worked!

Federal Expenditures Double Receipts

Taxes Mount Higher and Higher

THE mounting cost of government, especially in the Federal Administration, is of grave concern to every citizen.

The total public debt is now approximately 50 per cent greater than in 1929, yet the annual income of the American people is about 60 per cent of what it was in 1929.

Federal expenditures amounted to \$8,809,923,000 for the fiscal year ended June 30 against a Federal income of \$4,086,425,000, larger than the receipts of each of the boom years 1928 and 1929, and leaving a Federal deficit for the year in excess of \$4,723,000,000. Federal expenditures for the past year were more than double tax collections and about \$5,562,000,000, or 171 per cent, more than the average annual expenditures for the 10-year period 1922-1931.

Appropriations of \$19,296,000,000 were voted by the 74th Congress, just adjourned, bringing the Federal debt to almost \$34,000,000,000, or about \$9,000,000,000 greater than the peak reached at the end of the World War. The 74th Congress also levied a tax bill which it is estimated will place an additional burden of \$800,000,000 on the people.

Discussing national income, taxation and devaluation, in a comprehensive survey of the changing character of American banking just published in book form by Young & Ottley, Inc., investment managers, it is asserted that tax collections may reach \$17,000,000,000 to \$19,000,000,000 a year by 1950, practically doubling the national tax burden in 14 years. Such a drain on the people would face the United States with the possibility of another devaluation, or inflation, within the next 10 years.

Excessive costs of Government were recently scored by Senator Byrd of Virginia who is head of the special Congressional Committee to investigate and recommend means of reorganizing Federal departments in the interest of economy. The main objective of the Committee is the reduction and consolidation of the 40 new agencies of government created in three years of the New Deal.

When Mr. Roosevelt campaigned for the presidency in 1932 he recognized that "taxes are paid by the sweat of every man who labors" and again in 1933 after becoming President, held "high taxes are one of the contributive causes of unemployment." But the record of his administration is higher government cost—he "pledged" at least \$1,000,000,000 reduction—the greatest expenditures in the peace time history of the nation.

Only through taxes paid by all the people can the growing deficit and present excessive expenditures be met. Federal, State and local taxes take more than one-sixth of the annual income of the American people. The proportion of income devoted to taxation is one of the largest in the Nation's history. Adding further burdens to onerous Federal levies, States and a multiplicity of political subdivisions have increased their tax levies.

Certain commodities, products and services, because of the volume in which they are sold and their essential character, have been unfairly taxed to meet the demands of a rapidly expanding government, because it is thus possible to raise large sums with little effort on the part of the tax collector. There are so many special levies that in some cases the consumer pays a 100 per cent tax on his purchases.

Income and other taxes that are indirect and hidden in the cost of what the consumer buys are so high that they hamper trade and restrict employment.

A discussion of the tax situation in several large basic industries, on which a large share of the tax bill is levied, follows:

AUTOMOTIVE

OF the country's great industries which are subjected to higher and higher taxes, it is the automotive and petroleum industries where the tax burden is brought directly home to the average citizen.

At the beginning of the good roads era the proposal was made to tax the automotive and allied industries to finance a modern highway system. The ease with which the tax was collected soon led to abuses. As long as the money was for the purpose intended—to build and maintain good roads—the motoring public willingly paid. But with the growing tendency to divert this tax for general government expenses, the public is becoming aroused to the injustice of diversion and higher rates.

Motor vehicle user taxes in 1935 totaled \$1,288,000,000.

Motor users pay 13 per cent of all taxes, Federal, State and local. Or to put it differently, \$1 out of every \$8 in taxes collected by Federal, State and local governments, comes from the motorist.

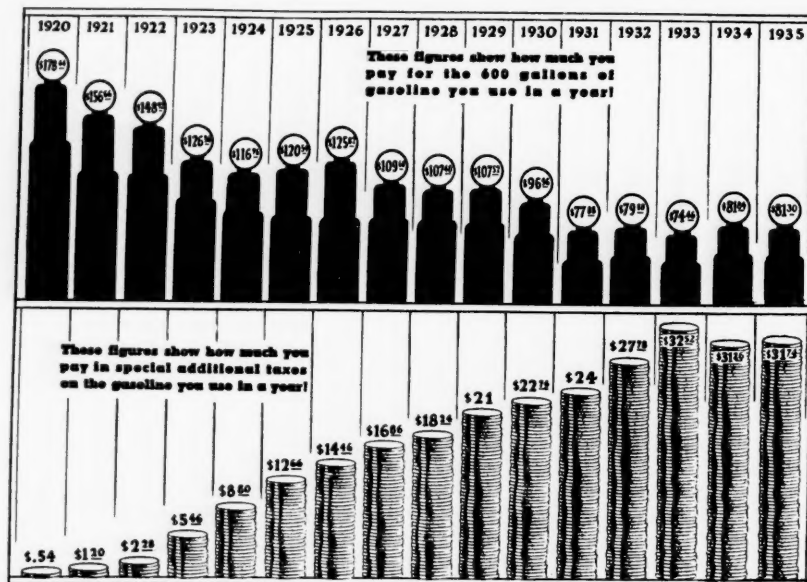
Considering the 1,121,000 persons engaged in automotive manufacturing, distributing and servicing trades with payrolls aggregating \$801,000,000, motor vehicle taxes total 68 per cent more than the workers get for producing and servicing motor vehicles.

Motor vehicle user taxes of \$1,288,000,000 collected in 1935 are about \$7,000,000 more than the total capital invested in automobile manufacturing.

Multiple taxes on motor users include Federal excise taxes on the wholesale value of motor vehicles, parts and accessories, and Federal gasoline and lubricating tax; general State taxes, sales and personal property; special city and county taxes in the form of registration fees, licenses, etc., and municipal and county taxes in some States. Among the special State taxes are gasoline sales tax, registration fees, certificate of title, operator's permits, gross receipts, capacity or mileage tax, occupational tax and privilege tax. This represents an interesting example of "double" taxation.

PETROLEUM

CONSUMERS of the product of the petroleum industry bear a large share of the tax burden. Taxes levied upon the petroleum industry and



Fuel Cost Per Car Compared With Tax Per Car

its products in 1935 for the third consecutive year exceeded the estimated value of the oil produced in the United States.

In 1933 the tax bill was \$1,004,828,000 as compared with the crude oil output value of \$608,000,000.

The 1934 tax bill was \$1,046,149,000 against \$904,825,000 estimated value of the crude oil output.

The 1935 tax bill is estimated at \$1,127,259,000 and crude oil production \$975,000,000.

Compared with 1921, crude oil value increased 19.7 per cent but tax costs increased 935 per cent.

In answer to the charge frequently heard that profits in the oil industry are too high, W. R. Boyd, Jr., executive vice-president of the American Petroleum Institute asserts that:

"For three quarters of a century there never has been either a protracted interruption in the downward trend of petroleum prices or in the upward trend of quality of products.

"The average earnings of the oil industry between the years 1921 and 1932 were only 1½ per cent. In its best year during the period the industry earned less than 5 per cent. As a result of moderate profits and high taxes the petroleum industry is in the unique position of seeing government derive from taxes on its principal income product far more revenue than it is able to make by manufacturing and marketing the commodity.

"The petroleum industry is not objecting to bearing its fair share of the cost of any generally applied tax program. It is not complaining of the reasonable and economically administrated cost of gov-

ernment. But it is protesting against being made, with its employees and its customers, the goat for 201 varieties of tax levies. It is objecting to being taxed, re-taxed and over-taxed for the support of uneconomically administered and unnecessary expensive government whenever and wherever that occurs. It is protesting sales taxes on its products ranging from 20 to 100 per cent, respectively, of their retail and wholesale market value, as is the case with gasoline."

Pointing out that general tax collections and national income are lower than in pre-depression times, the American Petroleum Institute shows that contrary to the general trend of recent years, petroleum taxes have risen steadily until in 1935 they were \$1,127,259,000, or practically double the \$620,000,000 figure for 1929, and now amount to approximately 12 per cent of all Federal, State and local tax collections.

STEEL

THE steel industry of the United States paid \$73,000,000 in taxes last year, according to a survey, by the American Iron & Steel Institute, of 127 companies doing 90 per cent of the nation's steel business.

Taxes paid by the 127 companies were substantially larger than earnings of \$62,962,000 in 1935 and were nearly double the \$38,926,000 paid in dividends to stockholders.

The year's tax total was equivalent to \$132 for each of the industry's 551,832 stockholders.

Dividends actually paid last year averaged \$71 per stockholder.

In 1931 and 1934 the tax bill exceeded available income while in 1932 and 1933 the companies showed an aggregate deficit even before providing for taxes.

The per ton tax cost to the steel consumer has averaged \$3.38 since 1929.

RAILROADS AND PUBLIC UTILITIES

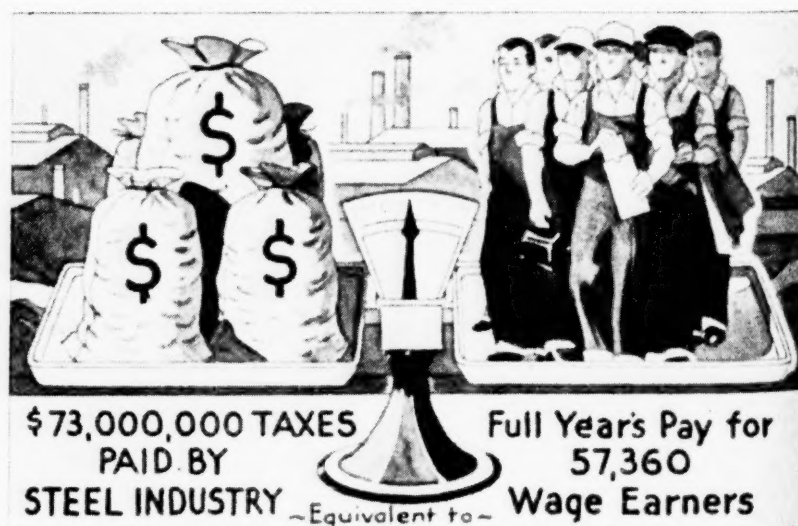
IN the increased tax burden upon American business, transportation among the public utility groups has been a popular objective for the higher tax advocates.

The railroads of the United States in 1935 had a net operating income of \$500,069,000 and a net deficit of \$287,538. They paid in taxes \$236,793,000.

Taxes in 1935 were more than double dividend disbursements and in fact during the past five years, the total railroad tax bill has been \$1,304,704,000 or \$526,546,000 more than were paid out in dividends.

Out of the railroad dollar of gross operating revenue 6.8 cents went for

Steel Taxes Measured In Terms Of Payroll



Taxes and Dividends Paid by Railroads

Year	Cash Dividends Paid	Taxes Paid
1931	\$330,150,873	\$303,528,099
1932	92,354,322	275,135,399
1933	95,725,783	249,623,190
1934	133,418,896	239,624,802
1935	126,508,314	236,793,115
Total five years	\$778,158,188	\$1,304,704,605

Taxes, Employees and Their Compensation, Stockholders, and Cash Dividends

(Railways of Class I in the United States)

Item	1916	1925	1935
Tax accruals—Amount	\$157,113,372	\$358,516,046	\$236,793,115
Tax accruals per dollar of operating revenue (cents)	4.4	5.9	6.8
Number of employees	1,647,097	1,744,311	994,079
Aggregate Compensation of employees	\$1,468,576,000	\$2,860,600,000	\$1,643,214,000
Average compensation of employees:			
Per employee	\$892	\$1,640	\$1,653
Per hour (cents)	28.3	63.1	68.6
Number of stockholders	*612,889	755,252	†884,887
Cash dividends declared	\$306,176,937	\$342,020,885	\$126,508,314
Cash dividends per stockholder	\$500	\$453	\$143

*Based on reports of the Carriers to the Bureau of Railway Economics.

†As of December 31, 1934. Data for 1935 not yet available.

SOURCE: Reports of the carriers to the Interstate Commerce Commission.

taxes in 1935, the remainder of the dollar being divided as follows: Wages and salaries 45.2 cents, fuel 5.9 cents, materials, supplies and miscellaneous 18.5 cents, depreciation and retirements 5.6 cents, rentals 3.5 cents, leaving 14.5 cents out of each dollar as net operating revenue.

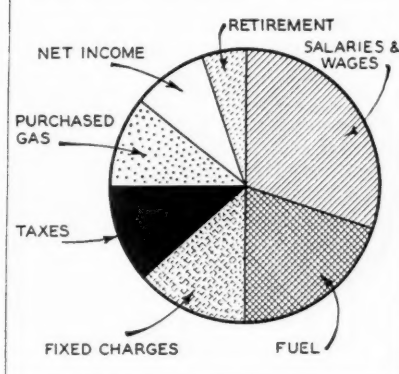
As an indication of the increasing taxes of the privately owned public utility business, the tabulation herewith, compiled from data assembled by the American Gas Association, shows that taxes paid out have increased from approximately

7.90 per cent to 9.29 per cent of the gross operating revenue.

MANUFACTURED GAS

In analyzing the figures of the manufactured gas industry, taxes paid of \$44,416,000 in 1934 were greater than the net income while in 1930 they represented about half of the net income. In 1934, taxes were 11.70 per

DISPOSITION OF OPERATING REVENUE



The Manufactured Gas Industry

cent of the gross operating revenue as compared with 9.58 per cent in 1930. The government collected from this industry in 1934 an amount almost equal to its fixed charges, nearly double the amount expended for maintenance, and about one-third of the total paid out in wages and salaries to its employees.

TAXES AND UNEMPLOYMENT

REDUCTION of taxes would enable business to pay higher wages, employ more people and create greater private buying power.

There is a definite relationship between taxes and unemployment. Taxes must be levied on the wealth the country produces, or else they are paid out of some previously created surplus. As such they must be considered as a cost of production. When taxes are levied to pay for "relief", part of the money allotted for the private employment of labor must be used and jobs are sacrificed. Conversely, low taxes leave more money for the private employment of labor; new jobs are created and more wealth is produced.

Comparison of Tax Burden on Industries Operating Under Regulation by Public Authority, 1930-1934

Industry	Operating Gross Revenue		Taxes Accrued		Tax Percentage	
	1930	1934	1930	1934	Gross Revenue 1930	Gross Revenue 1934
Manufactured gas	\$443,276,000	\$379,532,000	\$42,466,000	\$44,416,000	9.58	11.70
Natural gas	358,900,000	330,446,000	25,200,000	29,415,000	7.02	8.90
Electric light and power	*1,985,770,000	1,850,000,000	*198,000,000	246,300,000	*9.97	13.31
Telephone	1,209,664,000	973,424,000	92,854,000	95,048,000	8.24	9.76
Electric railways	832,000,000	634,000,000	57,152,000	49,343,000	7.25	7.78
Steam railways	5,281,197,000	3,271,566,000	348,554,000	239,624,000	7.25	7.32
Telegraph	169,642,000	119,053,000	5,078,000	4,354,000	3.06	3.66
Express	132,405,000	86,042,000	1,472,000	1,613,000	1.22	1.88

*1931.

COTTONSEED--

"FARM CINDERELLA"

One-Time Step-Child Of Southern Farms Now Second Most Valuable Cash Crop

ONLY one or two bold prophets dared, slightly more than a century ago when cottonseed was considered not only a waste but a nuisance, to make such predictions as these, recorded about 1829:

"The time will come when a man will just as soon think of throwing away his corn as his cottonseed."

"This oil (of cottonseed) may in the course of years become an additional source of wealth to the planters."

Despite these predictions, cottonseed was still generally considered a waste product twenty-five years later, and fifty years later cotton oil was not listed as

By
A. L. Ward,
Director, National Cottonseed Products
Association, Inc.

an edible product in the Encyclopedia Britannica.

Almost as much daring as that displayed by the earlier prophets is required to make predictions today as to the future of the cottonseed products industry. For example, the general public gives little credence to the forecast that cotton may some day be grown primarily for its seed rather than for its lint, yet this is far from a remote possibility, in view of the development of the cottonseed products industry and

of industrial uses for cottonseed in recent years.

Diversity of Uses

CHIEF crude products of cottonseed crushing are oil, cake and meal, hulls and linters. Total value of these products in the year ended July 31, 1935 was \$178,000,000, divided as follows:

Oil	\$91,849,000
Cake and meal	\$54,023,000
Hulls	\$10,260,000
Linters	\$21,606,000

Cottonseed is the second most valuable cash crop raised on the soils of the South, ranking second among crops only to lint cotton. The value of cottonseed to Southern farmers amounts yearly to about one-fourth of the value of lint. But the importance of cottonseed to the agriculture of the South is not limited to its immediate value as a source of revenue when sold as seed.

Cottonseed meal, cake and hulls are the South's greatest feed product, the ideal supplement for home-grown grains and roughages. Through livestock feeding and proper use of the manure, these products will return to the South's soils much of the fertility taken away by the growing cotton plant.

These facts—and the trend of the South's development—make it possible to predict that the future will see increasing utilization of cottonseed cake, meal and hulls for livestock feeding on Southern farms.

Livestock and Cotton

THIS will come about because the South is being, and will be to a greater extent in the future, forced to restore to the soil some of the fertility removed under a one-crop cotton farming system. This can be done most effectively through a combination of livestock and cotton in the farming system, feeding livestock on home-grown grains, roughages and cottonseed products.

The industrial development and increasing population of the South will

Man's Skill and Labor Improve on Nature's Work

COTTONSEED oil manufacture, one of America's oldest industries, began about 135 years ago in Columbia, S. C. From a small beginning, it has developed into one of the South's leading industries, whose products are of vital importance to the Nation.

The cottonseed crushing industry turns out over \$177,000,000 of manufactured products annually, representing about 30 per cent of the domestic vegetable fats and oils consumed in this Nation.

Its nearly 500 cottonseed oil mills annually expend for materials, fuel and power in excess of \$75,000,000.

It provides employment for 14,000 Southern workmen with an aggregate in wages of more than \$5,000,000. This number is employed in the mills and is exclusive of those required for handling and transporting the cottonseed and finished products.

Cottonseed, Classified as to Output and Value, 1935

	Production	Value
Cottonseed, crushed, tons	3,549,891
Cottonseed oil, pounds	1,108,582,294	\$91,849,000
Cake and meal, tons	1,614,345	54,023,000
Hulls, tons	913,039	10,260,000
Linters, bales	805,083	21,606,000

Factory Consumption, or Use, of Cottonseed Oil, 1935

	Pounds
Compound and vegetable shortening	985,798,000
Oleomargarine	99,505,000
Other edible products	138,580,000
Soap	1,857,000
Paint and varnish	36,000
Printing Inks	13,000
Miscellaneous	3,978,000
Loss and foots	103,972,000
Total	1,333,739,000

stimulate this trend, because of the growing demand for dairy products, meats and other animal products. The combination of this incentive with the need to restore soil fertility and our present-day knowledge of the feeding value of cottonseed meal and hulls offers every encouragement to the belief that the future will see increasing use of cottonseed feed products on the farms of the South and Southwest.

Oil is the most valuable single product of the cottonseed, constituting on the average about 60 per cent of the total value of the seed. The most important uses of cotton oil—shortening, salad oil and margarine—are fairly well known.

Face Difficult Problems

THE future holds serious problems for cotton oil, problems of the greatest importance to the Nation as a whole, as well as to the farmer, the ginner, the cottonseed crusher and the oil refiner of the South. These problems at present are centered in the use of cotton oil in margarine, an outlet which last year consumed approximately 100,000,000 pounds of cotton oil—six times as much as was used just four years ago.

The future market for cotton oil in margarine, and perhaps in shortening, depends upon the removal of unfair competition from low-priced foreign oils and of discriminatory taxes and laws against margarine made from American oils and fats. These problems will become increasingly important to every one in the South in the future.

New Uses In Industry

INDUSTRIAL uses for cottonseed products have expanded rapidly in recent years. The cottonseed products industry owes much to the chemists who have converted its crude materials into hundreds of products, including such a wide variety as plastics, varnishes, explosives, cosmetics, roofing, artificial leather and writing paper.

Research by industrial chemists has accounted for most of these developments, and private industry may be expected to find many other new outlets for cottonseed products in the future.

A Promise and a Challenge

THE future, then, holds for the cottonseed products industry both a challenge and a promise. If the challenge of the need for greater research and educational work on one of the South's leading cash crops is met, the future promises much for the farmers, ginner, crushers, oil refiners and the many others who depend upon cottonseed and its products for their incomes.

Some of the Many Uses of Cottonseed Products

Cottonseed Oils and Fats

Refined Oils—Foods . . .	Vegetable shortening, salad oils, cooking oils, packing oils
Refined Oil	Medical excipient
Fatty Acids	Soap and soap powder
Glycerin	Cosmetics, explosives, leather dressing, soap, lotions, etc.
Pitch	Artificial leather, cotton rubber, linoleum, oil cloth, roofing, etc.
Illuminating Oil	Miner's oil
Vegetable Stearin	Candles, waxes, etc.

Cottonseed Cake and Meal

Food Products	Flour and meals rich in concentrated protein and ash for human dietary
Livestock Feed	Concentrated protein feed, used widely in feed for dairy and beef cattle, hogs, sheep, horses, mules and poultry, and as base for mixed feeds.
Fertilizer	High grade (contains nitrogen, potash and phosphorus)

Cottonseed Linters

Rayon	Dress goods, stockings, underwear, etc.
Batting and Felt	Comforters, cushions, upholstery, cloth mattresses, pads
Lacquers	Aeroplane dope, automobile paints, brushing lacquers, mending cement, etc.
Varnishes and Enamels	Automobiles, furniture, floors, etc.
Cellophane	Artificial and non-shatter glass, wrappers for food, candy, cigars, confections, etc.
Bakelite	Battery boxes, insulators, radio panels and accessories, etc.
Collodion	Medical and repair purposes, etc.
Fabrics	Automobile tops, belts, brake lining, linoleum, artificial leather, etc.
Films	Motion picture and photographic films
Paper	All grades
Plastics	Fountain pens, handles, imitation ivory, phonograph records, pyralin, etc.
Surgical Dressings	Absorbent cotton, bandages, gauze, etc.
Yarn	Carpets, clotheslines, mops, string, wicks, etc.

Cottonseed Hulls

Livestock Feed	Roughage, bran, dilutant for meal, etc.
Basis for Explosives	Gun cotton, smokeless powder, etc.
Fertilizer	Humus, potash, etc.
Furfural	Synthetic rosin, etc.
Packing and Stuffing	Baseballs, horse collars, etc.
Pressed Paper	Insulators, reinforcements, etc.
Xylose	A saccharine concentrate of great potentialities

National Cottonseed Group Picks Officers

W. F. Pendleton, of Dallas, Tex., was elected president of the National Cottonseed Products Association, at its fortieth annual convention. Mr. Pendleton, who has been actively associated with the oil milling industry for more than forty years, is general manager of the Singleton Mills. He has served as president of the Texas Cottonseed Crushers' Association, the Oklahoma Cottonseed Crushers' Association, and for many years has been director of the National Cottonseed Products Association.

J. I. Morgan, retiring president, succeeded R. D. Gorham as director for North Carolina and Virginia; J. J. Lawton, of Hartsville, S. C., succeeded John T. Stevens, of Kershaw, S. C., for South Carolina; R. H. Patterson, of Trenton, Tenn., succeeded W. H. Jasspon, of

Memphis, Tenn., for Tennessee, Kentucky, Missouri and Illinois; H. E. Wilson, of Wharton, Tex., succeeded W. L. Weber, of Taft, Tex., and J. S. LeClercq, Jr., of Dallas, Tex., succeeded W. F. Pendleton, newly elected president, for Texas and New Mexico.

Directors re-elected are: F. S. Hunt, of Decatur, Ala., for Alabama and Florida; P. F. Cleaver, of Little Rock, Ark., for Arkansas; E. D. Black, of Macon, Ga., for Georgia; C. W. Wallace, of West Monroe, La., for Louisiana; George W. Covington, of Jackson, Miss., for Mississippi; A. L. Durand, of Hobart, Okla., for Oklahoma; R. M. Simmons, of Sweetwater, Tex., and Henry Wunderlich, of Austin, Tex., for Texas and New Mexico; W. B. Coberly, of Los Angeles, Cal., for all states west of the Mississippi River; O. E. Jones, of Chicago, Ill., Wright Youtsey, of Cincinnati, Ohio, and A. Q. Peterson, of New Orleans, La., at large.

COAL AND RESEARCH

By

Howard N. Eavenson

Eavenson & Alford, Mining Engineers,
Pittsburgh, Pa.

FOR many years some members of the coal industry have been interested in research work with the possibility of developing new outlets for their products. Work has been done on many projects in many institutions, resulting in a sporadic way, in additions to our knowledge of the black substance along many lines. It is only within the last ten years, however, that systematic and continued studies have been made with definite ends in view. Among these may be mentioned the valuable work on gas and coking coals done by the U. S. Bureau of Mines, at the instance and expense of the American Gas Association to ascertain the results of coking many of our American coals and the scientific work to determine the constitution of a certain coal and its behavior under many kinds of thermal decomposition done by the Coal Laboratory of the Carnegie Institute of Technology.

Importance of Research

Until quite recently it has been impossible, for a variety of reasons largely financial, to interest the industry as a whole in research work. Much "spade" work by individuals and the active sponsorship of National Coal Association finally resulted in the formation of Bituminous Coal Research, Inc. whose stockholders are National Coal Association and many producing companies. Early in 1935 a contract was made with Battelle Memorial Institute, of Columbus, O., for a three years' study of four projects and work is now being vigorously pushed on them. The main one and the one of most immediate importance to the coal industry is a study of relative and actual cost of heating houses, under similar conditions, using various types of firing, both hand and stoker, with bituminous coal, domestic coke, oil and natural gas, and extending over a full heating year. At the same time tests are being made to determine the proper sizes of coal to use in small stokers and the treatment of this coal to make it dustless, so that the householder can have much of the convenience of the liquid fuels with the large saving in cost of the solid one.

The Southern States Are Vitally Interested in the Coal Question and Developments That Will Lead to New Uses Since They Produce About 40 Per Cent of the Country's Coal Output and Have Immense Coal Resources

—Editor, Manufacturers Record

When completed these tests will show, for any large area, the proper size and the stoker best adapted for the coals available in that area and will affect a real saving for the domestic consumer using them, and at the same time meet the competition of the higher cost, and practically laborless, fuels.

Increased Economies

Most of the research work done on coal in the past has resulted in increased economies in its use, to the great benefit of Mr. John Customer, but without adding anything to the bank balance of the producer. From a national standpoint these savings are highly beneficial, and from a selfish one the producer can feel that if they had not been made that the loss to competing fuels might have been still greater. Much of the work that will be done in the future will result in the same way, as it is inevitable that increasing labor costs and those due to regulation and taxes will result in lessening the use of coal as compared with competing fuels not having similar cost increases.

New Uses

Can new uses be presently developed for coal to fill the gaps in production caused by the conditions cited? As Andy says—"yes and no," yes if we mean an increasing number of small uses, for chemical industries and what not, and no if we mean a tonnage that will represent a sizeable increase in the annual production. We know very little about what happens in a fire when coal is being consumed, and our immense boiler plants have been built on empirical knowledge only. It is entirely possible that a thorough, scientific inquiry into the process of combustion may so reduce the

cost of steam that power can be economically extended into fields not yet touched, and thus increase the amount of coal used. The Diesel engine was originally designed to burn coal, and the new metals available now may enable that idea to be realized and extend largely the use of equipment of this sort. It is highly probable that new methods of pretreating coal may cheapen our gas and coke supply and have other advantages as well.

Air conditioning and cooling considerably increased the use of coal, although of course through the power plants, and this use is still in its infancy and will be largely increased.

Oil From Coal

The largest new use for coal in sight—and it may be only by telescopes, although many well informed men say it will begin within ten years—is in furnishing the oil to replace the diminishing supply of petroleum. This, of course, will last for many years, but when the discovery of large new fields ceases, as it inevitably must, if our consumption remains at its present amount, and it is not likely to decrease,—some new supply must be provided. As all know oil is being made from brown coal in Germany, and the production is being increased largely now, and a new English plant has begun to use coal as the source of a small part of the gasoline used in that island. Such use is purely an economic problem of cost, but there will undoubtedly be large reductions made in this when actual production is started here. Very little of what happens in this process is yet definitely known, and some of our research men think it likely that an intensive study of hydrogenation may result in discovering a method that will accomplish the desired result with greatly lessened power consumption and at much lower temperatures.

Before we can discover new uses for coal of any consequence, it is absolutely essential that we know much more than we now do about the material itself,—when this knowledge is available, it can confidently be expected that this complex chemical coal will yield many forms of material of which little is now known, and which must open new avenues for increased use.

Now that regulation of the coal industry is with us—for a while at least—a fund for research work should be collected from the industry that will enable it to make such a study of its problems as has been done by its competitors, oil and gas, and by most of the other great industries. Only in this way can it progress toward the position to which its tremendous importance in our national life entitles it.

What's Ahead and Current IN THE ZINC INDUSTRY?

By

Ernest V. Gent,
Secretary,
American Zinc Institute, Inc.

SLAB zinc production in the United States during 1935 was 17½ per cent above 1934, while consumption represented an increase of over 32 per cent. Both production and consumption have been steadily gaining ground since the low point reached in 1932. To properly gauge current conditions in the zinc industry and develop indications for the future it is necessary to examine past performances, so let us look at the record.

Production

1932	213,531 tons
1933	324,705 tons
1934	366,933 tons
1935	431,499 tons
Jan.-April 1936	163,880 tons

On a monthly average basis the daily rate of production in 1934 was 1,004 tons and in 1935 1,182 tons. For the period January-April, 1936 this rate was 1,354 tons.

A further analysis of the above production figures shows that zinc production by distillation in 1935 did not keep pace with the total increase. Primary zinc produced in 1935 from domestic ore by the distillation process increased by 5.38 per cent and by electrolysis increased over 54½ per cent.

Robert Ammon, Chief Metallurgist of the American Zinc Company of Illinois said in a recent interview of retort smelting operations:

"Retort zinc producers are tending toward the production of higher grade slab zinc through the elimination and recovery of impurities in their ores. The high price of and heavy demand for cadmium metal have been incentives for cadmium recovery from ores wherever possible. Several plants are considering the recovery of cadmium.

"At least two plants are adding to high grade production by additional vertical retorts. These plants are also constructing fractional distillation columns for converting impure primary and secondary metals into high grade zinc."

Consumption

The consumption of metal in 1935 increased fully 30 per cent over the previous year, 1929 being the most recent year when consumption was greater. The monthly average of shipments during 1935 was 38,812 tons which, since the first of the year, has increased to 41,714 tons.

How does industry use this great quantity of metal? This is a question

MINE production of recoverable zinc in the South in 1935 was 141,215 tons, with Oklahoma, the leading producing state in the country, supplying 133,600 tons. The South has been producing from 28 to 34 per cent of the country's total zinc output.

Total production was 517,020 tons in 1935, an increase of 18 per cent over 1934. Domestic consumption of 461,000 tons of zinc was 32 per cent higher than in the preceding year, the largest in six years.

In the past year or two an important development trend in the industry has been the increasing establishment of zinc ore concentrating plants in the producing area of the South to handle material from individual small mining operations.

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which is often asked because zinc so frequently loses its identity in the various products of which it is an essential constituent. No one knows in exact detail just what quantities of zinc are consumed in the various industries which employ it but the table with explanatory notes, taken from the Yearbook of the American Bureau of Metal Statistics, gives approximate figures of the principal uses in 1934 and 1935, to which is added the percentage of increase in 1935 over the previous year.

	1934	1935	% Increase Over 1934
Galvanizing	152,000	195,000	28.28
Brass Making (d)	98,000	112,000	14.28
Rolled Zinc	40,900	56,000	38.14
Die Castings	32,000	55,500	73.43
Other purposes (b)	37,000	42,000	13.51
Totals	359,900	461,000	

(b) Includes slab zinc used for the manufacture of French Oxide, lithopone, atomized zinc dust, zinc for wet batteries, slush castings, and for the desilverization of lead. (d) Includes all casting other than die casting, slush casting and battery zinc.

The consumption of rolled zinc in 1935 with corresponding figures for 1934 in brackets breaks down approximately as follows: Fruit jar tops 18,000 (15,000); battery cans 15,300 (12,500); automobile manufacture 7,000 (5,000); boiler plate 1,000 (800); exports 4,800 (3,500); other uses 8,000 (6,000).



ERNEST V. GENT became secretary of the American Zinc Institute, Inc., on May 1, 1935. His introduction to the zinc industry was in 1925, when he became manager of the Zinc Export Association, formed by producers of Prime Western slab zinc under the Webb Law for export trade. Mr. Gent held the position until the Association was dissolved in December, 1934. Previous to his connections in the zinc industry, Mr. Gent was a member of a firm engaged in production and marketing of heavy chemicals, which was among the first to introduce American heavy chemicals into foreign markets. For many years he has been active in trade association work, having been manager of the Carbon Black Export Association.

Research Pays Dividends

With the general improvement in conditions results from research and production (Continued on page 60)

The Wonderland of Glass

REVOLUTIONARY DEVELOPMENTS PORTRAYED

Extensive Research to Improve Existing Products and Find New Fields for Their Use Develops the Largest Volume of Business in the History of Glass Industry

By
R. A. Miller,
Technical Sales Engineer,
Pittsburgh Plate Glass Co.

ALTHOUGH the glass industry is probably one of the oldest manufacturing industries in the world, still the developments of the last two decades have so far out-stripped all previous advancement as to have entirely revolutionized the industry. The rapid development of new chemical knowledge and of new applications of general physical principles have changed the entire character of glass manufacture. The development of new combinations of glass and other materials have led to very much more widely diversified uses of glass than were previously contemplated.

SINCE 1924, the industry has been transformed from a discontinuous production system into one which is essentially a completely continuous operation. This appears to be essentially true of all of the various glass production methods, in the pressed and

Glass Making Continuous

Essentially true of all of the various glass production methods, this transformation dates from 1924.



THE author, R. A. Miller, was graduated from Yale University and Massachusetts Institute of Technology, and entered the employ of the Pittsburgh Plate Glass Co. in 1921. At the outset, he served as apprentice and subsequently was an assistant in charge of sheet glass development, a foreman and assistant factory superintendent. He was research chemist for the H. K. Mullford Co. for a year, later being connected with a commercial chemist firm in New York, and as research chemist for the U. S. Rubber Co. He was named to his present position in 1930.

Use of Glass Expanded As

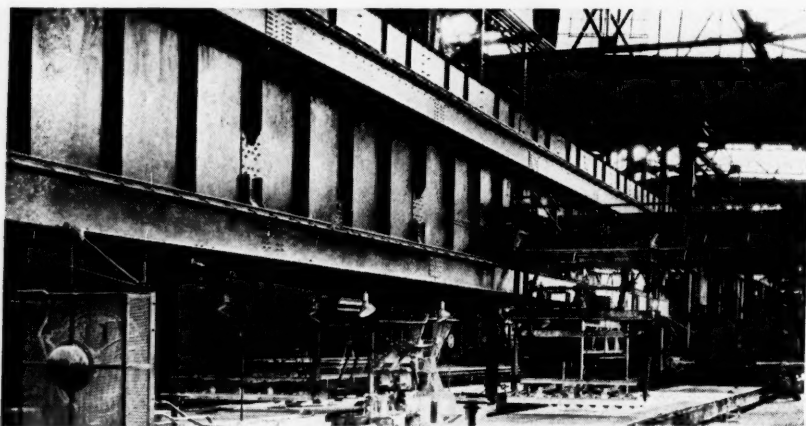
**Protective Material
Structural Material
Decorative Material**

blown ware fields as well as in the bottle field and the flat glass production.

This transformation from the discontinuous to continuous operation has resulted in enormous savings in time, with resulting economy in operating costs and necessary storage facilities for unfinished products. It has also called for especial care in avoiding the excessive increase in production capacity which was the pitfall of many of our larger industries during the boom period of 1928 to 1929. With the exception of this period, the average utilization of production capacity has seldom materially exceeded 75 per cent to 80 per cent.

DURING the recent depression, the development of new applications of glass and of new types of glass have been continuously pushed by the several glass manufacturers. This activity has resulted in vast improvement in the type of safety glass available for automobile and other glazing, and in very much more widespread use of glass for decorative and utilitarian purposes. Structural glass has begun to be recognized as of fundamental value in building design and construction. The development of various types of glass insulating materials, such as glass wool, multiple glazed units for immediate installation, glass structural brick, have all come within the period immediately preceding and during the depression.

THE steadily increasing interest of the glass manufacturer in the promotion of research activity has been largely predicated upon the conditions encountered during the depression years. The increasing demand of the consuming public for more complete and more fundamental information concerning the capacities of glass for meeting



certain conditions has had an extremely beneficial effect upon the industry as a whole.

THE tremendous increase in the use of automobiles has had its effect upon the glass industry, so that in the flat glass field, the manufacturer is no longer wholly dependent upon the building industry for an outlet for his product. Today, the automobile industry is consuming rather better than 50 per cent of the total plate glass production of the country.

THE demand for improved safety glass for automobile use has had far reaching effect upon other industries as well as the glass industry and has especially resulted in the development of new plastic materials of better quality than were previously available. Constant research in the field of synthetic rosin has been necessary. The results have been most gratifying from the standpoint of all concerned.

IN every branch of the glass industry, new and improved methods of manufacture have been developed and adopted, in most instances after considerable expenditure of time and money in the development of such processes.

WE seem to be emerging from an era in which we saw glass only darkly, to one in which glass is becoming of paramount importance. The interest of architect and home builder in glass and glass products seems to be very greatly increased. This increasing demand is being met by the developments of products which are materially stronger than the glass which all of us have known. The development of aerial navigation is leading to investigations of glass properties which have not previously been considered of importance. Air-conditioning with its many ramifications presupposes some wholly satisfactory means for insulating windows against the loss of heat and has led to several interesting developments in glass products for this purpose. Research in the field of solar radiation has developed knowledge of the effects of various bands of the solar spectrum, both in the visible and invisible portion and here again, the glass chemist has been called upon to produce a product with very specific properties. The result has been the production of several types of glass, one of which will transmit a very large percentage of the total solar heat, while transmitting none of the total solar light and another which will transmit a very large proportion of the solar light with a very small

Basic Needs Of Glass Industry Abound In South

GLASS making in the United States was first undertaken in 1608 in the Jamestown Colony of Virginia. Following this crude effort to make glass beads in order to trade profitably with the Indians, the manufacture of glass was centered in New England, but in the long period since, the trend of the industry has been to the South and Southwest.

With the development some 40 years ago of glass making machinery and the more recent perfection of production of window glass entirely by machinery, these revolutionary changes in methods and operations caused a shifting in factory location. West Virginia, which 45 years ago had no glass factory, is now an important factor in production and likewise several points in the Southwest have become large producers.

Available cheap gas for fuel, as well as abundant raw materials including silica from pure white sand, lime, soda ash, salt cake, lead, barium, etc., to be had in the South and Southwest beckon manufacturers.

Latest census figures of the glass industry show the South has 60 manufacturing establishments with an annual output valued at about \$40,000,000.

A \$6,000,000 plant to produce synthetic rosin, to be used largely in shatterproof glass manufacture, will be built in the Southwest by the Carbon and Carbide Corp. interests of New York City.

Expansions recently completed and now under construction mean enlarged production facilities at glass plants in Crystal City, Mo., Shreveport, La., and Henryetta, Okla.

Renewed interest is shown in improvement of glass container making plants. Also glass manufacturers are investing heavily in improved distributive facilities in the South.

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proportion of the total solar heat. Others are designed to exclude the ultra-violet ray, while still others will transmit increasingly greater proportions of the ultra-violet.

TODAY, glass is being used for dance floors, the lining of swimming pools, the wainscoting of bathroom and kitchen walls, as well as other portions of the dwelling and office buildings. Glass windows in the walls of swimming pools and other places where large pressures are anticipated, are becoming quite general. This new product offers the same mechanical strength as ordinary glass of twice the thickness. Its fragility is only a small fraction of the fragility of ordinary glass and its flexibility is many times as great as the flexibility of untempered glass.

WE appear to be upon the brink of the development of an era of glass which will approximate in importance the developments of the age of steel, in which we live. Continued research and mechanical development should carry us forward into much more extensive and interesting fields.

265,142,000 Pounds Rayon Made In 1935

Production, Value and Number Employed
All Set New Highs

WITH the South having 70 per cent of the country's rayon manufacturing capacity and some of the largest plants in the world, the continued increase in rayon production and use is of special interest to this section. Both production and employment in the manufacture of rayon and allied products are at the highest point since the industry was established in this country.

Rayon production, according to the latest Census Reports, amounted to 265,142,000 pounds, an increase of 24 per cent over 1933 and 35 per cent over 1931, the two preceding census years.

Total value of all products made was \$181,154,000, an increase of 15.4 per cent as compared with 1933 and 36.6 per cent over 1931.

The number of employees in 1935 was 50,165, a gain of 13.2 per cent over 1933, in establishments engaged wholly or principally in the manufacture of rayon yarn and products of similar composition, but not including establishments making products from rayon as a material.

\$423,355,000 IN CONSTRUCTION AWARDS IN SIX MONTHS

CONTRACTS awarded for building, engineering and construction projects in the sixteen Southern states during the first half of 1936 have a total valuation of \$423,355,000 compared with \$235,563,000 for the corresponding six-month period of the preceding year, and with \$261,979,000, representing the value of awards in the first half of 1934.

The six-month figure this year exceeds by 80% the value of contracts let in the same period of last year, and is 61% greater than the valuation of awards in the first six-months of 1934.

The June awards of \$67,851,000 also represent a six-year high record, and compare with awards of \$44,099,000 in May, 1936, and with \$45,503,000 and \$27,263,000 for June, 1935 and 1934, respectively.

Industrial plant construction aggregating \$125,486,000 in the six-month period just ended, exceeds by 187% the total of \$43,729,000, representing the value of industrial plant contracts awarded in the first half of 1935. No other major classification shows so striking a gain.

The new industrial enterprises and expansion programs of established industries dot the territory from Maryland to Texas, and cover a wide range of activities, providing employment for skilled workmen in practically all lines of endeavor, turning out products that, when listed, catalog the needs of modern man, and creating a demand for building materials and plant equipment turned out by factories throughout the nation. For the South is not only producing heavily, it is buying in greater volume than ever before.

Paper plants under way and projected, calling for an outlay of \$40,000,000 head the list of industries in the spotlight. The chemical industry is concentrating in the territory from Maryland to Texas. In addition to utilization of the South's limitless natural resources, these industries are consuming steadily increasing quantities of industrial crops produced on Southern farms.

The major industrial award last month was for a \$5,000,000 paper mill at Charleston, S. C., for the West Virginia Pulp & Paper Co., of New York City. A \$2,500,000 power plant addition was started at Rivesville, W. Va., by the Monongahela-West Penn Power Co.

Work started at Albany, Ga., on a \$500,000 packing plant for Armour & Co., of Chicago. The Fredericksburg, Va., plant of the Sylvania Industrial Corp. launched a \$200,000 extension program. A Nashville, Tenn., shoe plant let a contract for a \$105,000 addition. A \$100,000 packing plant was put under way in Memphis, Tenn. A Louisville, Ky., distillery started work on a \$100,-

SOUTHERN CONSTRUCTION ACTIVITY June, 1936

	Contracts Awarded	Contracts to be Awarded
GENERAL BUILDING		
Apartment and Hotels	\$3,573,000	\$1,355,000
Association and Fraternal		173,000
Bank and Office	331,000	60,000
Churches	409,000	558,000
Dwellings	4,998,000	1,177,000
Stores	1,152,000	1,142,000
	\$10,463,000	\$4,765,000
PUBLIC BUILDINGS		
City, County, Govern- ment and State	\$7,358,000	\$7,679,000
Schools	2,763,000	3,014,000
	\$10,121,000	\$10,693,000
ROADS, STREETS AND PAVING		
.....	\$18,263,000	\$13,430,000
INDUSTRIAL AND ENGINEERING PROJECTS		
Drainage, Dredging and Irrigation	\$2,767,000	\$2,440,000
Filling Stations, Garages, etc.	284,000	250,000
Industrial Plants	20,401,000	17,505,000
Levees, Retirements, Seawalls, Dikes, etc.	1,644,000	1,650,000
Sewers, Drainage and Waterworks	3,908,000	2,782,000
	\$29,004,000	\$24,627,000
TOTALS	\$67,851,000	\$53,515,000

000 addition. A timber development at Norton, Va., to cost \$100,000 was started. A Texas City, Tex., oil refinery extension will cost \$200,000, and a new abattoir and packing plant at Savannah, Ga., calls for an outlay of \$150,000. A Memphis, Tenn., garage started in June will cost \$140,000.

The large volume of industrial plant construction in the planned stage is most encouraging. A \$12,000,000 paper mill project is proposed at a Southern location; Brunswick, Ga., having been most prominently mentioned. The Tennessee Valley Authority will award contracts this month for a 12-mile access highway over which materials and machinery will be moved to the 300-foot high Fowler Bend Dam to be built on the Hiwassee River in western North Carolina. Locks to cost \$1,000,000 are proposed at Tuscaloosa, Ala. Meanwhile, the War Department is awarding contracts for dredging, dikes, seawalls, levees and flood control and navigation works along the Atlantic and Gulf Coasts and many miles of waterways in the Southern states, providing for the employment of firms specializing in many classes of construction and bringing into use the most efficient plants yet developed for earth moving.

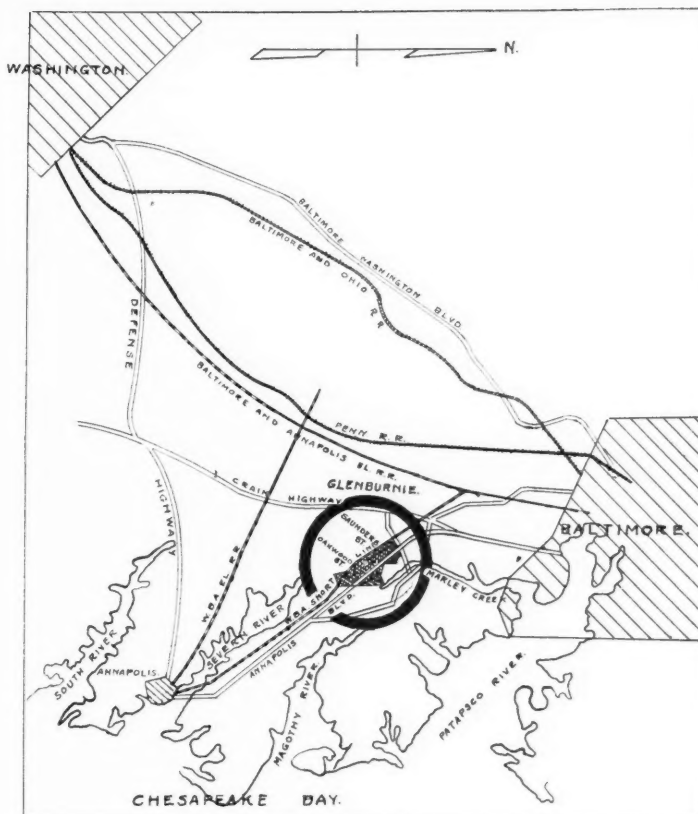
A coal mine proposed at Catlettsburg, Ky., calls for an outlay of \$250,000. A fruit and vegetable pre-cooling plant for Fort Lauderdale, Fla., will cost \$100,000. In the aggregate thousands of miles of rural electric power lines are proposed.

SOUTHERN CONSTRUCTION ACTIVITY First Six Months 1936

	Contracts Awarded	Contracts to be Awarded
General Building		
Apartment and Hotels	\$14,187,000	\$13,294,000
Association and Fraternal	409,000	1,253,000
Bank and Office	2,735,000	1,903,000
Churches	1,519,000	4,285,000
Dwellings	20,514,000	13,504,000
Stores	6,337,000	9,656,000
	\$45,701,000	\$43,895,000
Public Buildings		
City, County, Government and State	\$63,351,000	\$109,082,000
Schools	32,242,000	47,070,000
	\$95,593,000	\$156,152,000
Roads, Streets and Paving	\$119,584,000	\$170,658,000
Industrial and Engineering Projects		
Drainage, Dredging and Irrigation	\$ 5,260,000	\$82,332,000
Filling Stations, Garages, etc.	2,352,000	3,825,000
Industrial Plants	125,486,000	242,543,000
Levees, Retirements, Seawalls, Dikes, etc.	6,393,000	8,808,000
Sewers, Drainage and Waterworks	22,986,000	44,486,000
	\$162,477,000	\$382,054,000
TOTALS	\$423,355,000	\$752,759,000

Superior Location

Three hundred and forty acres, ten miles south of Baltimore, between Baltimore and Annapolis near the center of a triangle of these two cities and Washington, the nation's capital.



PICTURESQUE SAUNDERS RIFLE RANGE

Ideal setting for modern industrial plants

IN AN UNUSUAL way, Saunders Range meets the requirements of present day plans of many manufacturers: it is near several of our largest cities without being in the midst of them; it is in a beautiful suburban area with a matured growth of beautiful oak trees among rolling hills, well drained. It has a branch railroad skirting one and one-quarter miles of its property for freight and passengers connecting with B & O Railroad for Washington and Baltimore. Concrete roads connect the property with Baltimore, Annapolis and Washington and a 150 ft. modern dual boulevard is now under construction in a straight line through the whole length of the property. It is only fifteen minutes ride from Baltimore.

Many modern manufacturing plants are wisely locating where suitable residences for employees and their families may dwell and Saunders Range offers this advantage because of the beautiful setting the property offers. It is unusually attractive for homes for officials and employees with a community center at a half way point on the new dual highway.

At the lower end of the property, there is a prominent waterway with a bold stream emptying into the Chesapeake Bay a short distance away. With a little dredging, a scow can be brought up to the edge of the property.

In this community, there is an abundance of intelligent native labor. Here is an ideal distributing point for Atlantic Coast cities—convenient connections with Washington, Baltimore, Philadelphia and New York and the Port of Baltimore offers unusual service for foreign and domestic shipping.

The section of the property set aside for manufacturing sites is along the railroad and the topography of hills and old oak trees sufficiently seclude the manufacturing area from the residence section.

The whole setting calls for high grade industries to take advantage of the opportunity offered for profitable manufacture and the distribution of products.

During the past year or so, strikes and other annoying situations have prompted manufacturers to consider moving their plants into locations that offer pleasant and home-like conditions for their employees and families in an atmosphere of contentment and where normal home-life may be encouraged.

The owner will for a limited time donate suitable tracts for appropriate industrial enterprises where all modern conveniences and facilities will be available.

Plats and photographs and other information available. Correspondence solicited.

THE GLENBURNIE DEVELOPMENT COMPANY

George B. Furman
President

1409 L Street, N. W.
Washington, D. C.

Some Representative Projects In The South Last Month

Proposed Construction

Ala., Tuscaloosa—U. S. Engineers	
Locks at dam No. 10 Warrior River	\$1,000,000
Fla., Jacksonville—City Utilities Commission	
Power plant improvements	900,000
Fla., Miami Beach—Normandy Plaza Hotel Corp.	
74-room hotel; L. Murray Dixon, Archt.	105,000
Fla., Orlando—Atlantic Ice and Coal Corp.	
Brewery	300,000
Ga., Gainesville—Brenau College	
Dixie Hunt hotel; J. J. Chase, Atlanta, Archt.	150,000
Ky., Catlettsburg—C. J. Neckamp and Associates	
Coal terminal	250,000
La., Plaquemine—Iberville Parish School	
School building program	180,000
La., Port Allen—West Baton Rouge Parish	
Schools; Bodman & Murrell, Baton Rouge, La., Archts.	125,000
La., Villa Platte—Evangeline Parish School Board	
School buildings; M. J. Heinberg, Jr., Archt., Alexandria, La.	300,000
Md., Baltimore—Board of Awards	
Art Museum addition; John Russell Pope, New York City, Archt.	400,000
Md., Salisbury—Wicomico County Board of Education	
New school building program; Malone & Williams, and E. Wilson Booth, Archts.	450,000
Miss., Tupelo—Board of Education	
New building; N. W. Overstreet & Town, Jackson, Archts.	300,000
Mo., Clayton—St. John-Overland Sanitary sewer district	
Sewers and disposal plant; Kinsey Engineering Co., Engr.	310,000
Mo., Fulton—City	
School buildings	146,000
Mo., Fulton—State Bldg. Commission	
Clinic and hospital, State hospital No. 1; Preston J. Bradshaw, Inc., St. Louis, Archt.	367,000
Mo., Kansas City—City, H. F. McEllory, City Manager	
Rebuild burned airport	100,000
Mo., Kirksville—City	
Drainage project for Chariton River	160,000
Mo., St. Louis—James R. Kearney Corp.	
Electrical equipment manufacturing plant	150,000
N. C., Greensboro—Carolina Webbing Co.	
Erect building for weaving elastic fabrics	100,000
N. C., Landis—Town, L. A. Comlier, Mayor	
Water and sewer systems	174,000
N. C., Raleigh—Central Board of Trustees	
Preparatory school for State	600,000
N. C., Raleigh—North Carolina Theatres, Inc.	
New building	250,000
Okla., Perry—City	
Water supply reservoir	200,000
Okla., Tulsa—St. Johns Hospital	
Nurses Home; Arthur M. Atkinson, Archt.	200,000
S. C., Charleston—City	
23-mile water tunnel	1,000,000
Tenn., Bristol—Sullivan County Board of Education	
School buildings	235,000
Tenn., Knoxville—City, George R. Dempster, City Manager	
Incinerator	150,000
Tenn., Memphis—Dixie-Greyhound Lines, Inc.	
Garage and office building and additional equipment ...	150,000
Tenn., Nashville—Tennessee Electric Power Co.	
Extension of underground power distribution system	
3-year program	1,000,000
Tex., Beaumont—S. C. Dezendorf, Port Director	
Warehouse and barge terminal	300,000
Tex., Dallas—Interstate Circuit	
Tower theatre; W. Scott Dunne, Archt.	125,000
Tex., Dallas—Methodist Publishing House	
5-story building	150,000
Tex., Fort Worth—Board of Education	
I. N. Terrell negro high school; Clyde H. Woodruff, Archt.	215,000
Tex., Houston—Port Commission	
Deepen and widen Houston ship channel	3,500,000
Tex., Houston—Fort Ben Utility Co.	
Improvements Sugar Land Industry's power system ...	250,000
Tex., Houston—City, Mayor O. F. Holcombe	
Municipal airport	1,000,000
Tex., Port Arthur—Port Arthur Independent School District	
Junior High School	500,000
Tex., Raymondville—Willacy County Water Control & Improvement District No. 1	
Irrigation district improvements in Willacy and Hidalgo Counties	4,853,000
Tex., San Benito—Frank S. Robertson and Associates	
Interested in common water supply system for group of irrigation districts; W. B. Anderson, San Benito, Engr.	1,500,000
Tex., Temple—City	
Power plant; Garrett Engineering Co., Houston, Engrs.	800,000
Tex., Van—Board of Education	
Gymnasium and vocational school; W. G. Clarkson & Co., Fort Worth, Archts.	125,000
Tex., Waco—McLennan County Commissioners	
Court house annex and jail	200,000
Va., Clarendon—U. S. Treasury Dept.	
Post office	200,000
Va., Norfolk—Board of Education	
Junior and senior high school and school additions ...	578,000

Contracts Awarded

Ala., Montgomery—City	
City Hall and auditorium; Algernon Blair, Contr.	536,000
Ark., Little Rock—City	
32-mile water pipeline; Lock Joint Pipe Co., Ampere, N. J., Contr.	1,562,000

D. C., Washington—Cafritz Construction Co.	
Apartments; Owner is builder	1,000,000
D. C., Washington—District of Columbia Commissioners	
Water mains; Columbia Foundation Co., Contr.	244,000
D. C., Washington—District of Columbia Commissioners	
Blue Plains sewage plant; Industrial Piping & Engineering Co., Baltimore, Contr. for piping, grading, ducts, etc.	168,000
D. C., Washington—District of Columbia Commissioners	
Addition to school; Harwood-Nebel Construction Co., Contrs.	302,000
S. C., Charleston—War Dept.	
Winyah Bay Dredging; Standard Dredging Co., New York City, Contr.	455,000
D. C., Washington—E. E. Smith	
Apartment buildings; Smith & Marshall, Bldrs.	100,000
D. C., Washington—Home Owners' Loan Corp.	
New building; James Stewart & Co., New York City, Contr.	1,450,000
D. C., Washington—Thirteen Hundred and Fourteen Massachusetts Avenue Co., Inc.	
Apartment building; James Baird Co., Inc., Bldr. ...	230,000
Fla., Jacksonville—War Dept.	
Homosassa River dredging; Atlantic, Gulf & Pacific Co., New York City, Contr.	1,154,000
Fla., Jacksonville—War Dept.	
Choctawhatchee Bay dredging; W. E. Callahan Construction Co., Dallas, Tex., Contr.	1,531,000
Fla., Miami Beach—Universal Corp.	
Hotel, swimming pool, etc.; O'Neill-Orr Building Corp. Contr.	186,000
Fla., Miami Beach—Cowan Corp.	
80-room hotel	\$ 150,000
Fla., Pensacola—U. S. Navy Air Corps	
Naval air station improvements; Smith Engineering & Construction Co., Pensacola, Contr.	370,000
Ga., Albany—Cudahy Packing Co.	
Packing plant; Fiske-Carter Construction Co., Spartanburg, S. C., Contr.	500,000
Ga., Gainesville—Hall County Commissioners	
Court house; Charles Mion, Atlanta, Contr.	156,000
Ga., Macon—Mulberry Market	
Market structure; R. H. Smallings & Sons, Contr. ...	200,000
Ga., Savannah—H. T. Shore and J. T. Horney	
Abattoir and packing plant	150,000
Ga., Savannah—War Dept.	
Dredging Savannah harbor; Arundel Corp., Baltimore, Contr.	217,000
Ky., Lexington—Fayette County, Board of Education	
Kenwick elementary school; Louis DesCognets & Co., Contr.	104,000
Ky., Louisville—Louisville & Nashville Railroad	
Elevated track structure; Henry Bickel Co., Contr. ...	1,500,000
La., Ida—Rodessa Gasoline Co.	
Gasoline extraction plant; Herbert Dickard & Co., Monroe, La., Contr.	120,000
La., Minerva—Magnolia Sugar Cooperative, Inc., Houma, La.	
Sugar mill; Pittman Bros., New Orleans, Contr.	180,000
Md., Bethesda—U. S. Public Health Service	
Animal service building; L. G. Turner, Washington, Contr.	131,000
Miss., Greenville—U. S. Engineer Corps	
Outfall sewer system; Volz Construction Co., Ripley, Tenn., Contr.	222,000
Mo., Birmingham—State hospital	
5 new cottages, alterations and additions; McCarthy Brothers Construction Co., St. Louis, Gen. Contr. ...	350,000
Mo., Sheldon—Texas-Empire Pipeline Co., Tulsa, Okla.	
Expansion and improvement program; Oklahoma Contracting Corp., Dallas, Tex., Truman-Smith Construction Co., El Dorado, Ark., Kelley-Dempsey Co., Tulsa, Okla., Jones & Brooks, Inc., Oklahoma City, Okla., and Williams Bros. Construction Co., Contrs.	4,500,000
Mo., St. Louis—Missouri Pacific Railroad Co.	
Rails and accessories; Sheffield Steel Co., St. Louis; Achuff Railway Supply Co., St. Louis, and Handlan, Inc., St. Louis, Contrs.	400,000
Okla., Oklahoma City—Board of Education	
Northeast high school; Tankersley Construction Co., Contr.	234,000
S. C., Charleston—West Virginia Pulp & Paper Co., Inc., New York City	
Kraft linerboard mill; Morton C. Tuttle, Boston, Mass., Contr.	5,000,000
Tex., Austin—University of Texas	
Museum; J. E. Morgan & Son, El Paso, Contr.	266,000
Tex., Beaumont—Yount Memorial Mausoleum	
New mausoleum; N. L. Ross, Contr.	100,000
Tex., Beaumont—Magnolia Petroleum Co.	
2 lubricating oil treating plants; Lummus Co., New York City, Contr.	1,000,000
Tex., Orange—Orange County Commissioners	
Court house; Falbo & Falbo, San Antonio, Contrs. ...	175,000
Va., Fredericksburg—Sylvania Industrial Corp.	
Addition to plant; Hughes-Foulkrod Co., Philadelphia, Pa. (est.)	200,000
Va., Roanoke—Norfolk & Western Railway	
Equipment and rail laying program; contracts awarded in part to Pressed Steel Car Co., Virginia Bridge Co., Carnegie-Illinois Steel Co., and Bethlehem Steel Co.	11,669,000
W. Va., Bluefield—Sanitary Board	
Sewer improvements; Oscar Vecceolo, Itman, W. Va.; Ullen Contracting Corp., Chicago, Ill.; Industrial Piping & Engineering Co., Baltimore, Md., Contrs. ...	500,000
W. Va., Charleston—Hatfield-Campbell Creek Coal Co.	
Steel barges; Bethlehem Steel Co., Pittsburgh, Pa., Bldr.	348,000
W. Va., Riversville—Monongahela-West Penn Public Service Co., Fairmont	
Power plant expansion; Sanderson & Porter, N. Y., construction Engrs.; General Electric Co., and Babcock & Wilcox, Contrs. for generator and boilers respectively	2,500,000



A New "Oregon Trail"

Coos Bay Bridge, North Bend, Oregon.
 Total length of main steelwork, 1708 feet.
 Length of anchor arm spans, 457½ feet.
 Length of center span, 793 feet.
 Clearance under suspended span, 152 feet.
 Conde Bascom McCullough, Engineer.

The two anchor arm spans were erected first followed by the suspended span in the middle.



There is a wide span from the Oregon Trail and Covered Wagon of the early pioneers to the new Oregon Coastal Highway which invites and intrigues the Motorist of today. But it is the same spirit to push forward and to build.

The Coos Bay Bridge is the longest and most important link in this new highway. The main steelwork for the 1708-foot span was fabricated and shipped from our Memphis plant.

We build big bridges and big buildings but you can be sure of no less careful attention and handling of your smallest requirement in steel construction.

VIRGINIA BRIDGE COMPANY

Roanoke Birmingham Memphis Atlanta
 New York Charlotte Austin El Paso
 Plants at Roanoke, Birmingham, Memphis.

VIRGINIA BRIDGE

S T E E L S T R U C T U R E S

JULY NINETEEN THIRTY-SIX

IRON, STEEL AND METAL MARKET

IRON and steel operations climbed to the highest rate in six years during June, as labor organizers launched a drive for unionization of the industry.

The operating rate for June was above 71 per cent of capacity, reaching 74 per cent before the closing week of the month, as compared with an average of 62.5 per cent for the first half of the year. At the close of the last month of the second quarter last year, the operating rate was only 33 per cent of capacity.

The contra-seasonal increase in demand and production as summer advanced was one of the encouraging trends of improvement in business. There had been a broad rise in iron and steel demand, but this was intensified by the rush of orders from customers to get in ahead of the third quarter increase in prices which was announced some time ago. With the anticipated recession in activity for the Independence Day holiday period, the backlog of orders promises to keep steel makers busy well into August. Meanwhile some concerns have been unwilling to take more tonnage at current prices.

All Divisions of Industry Active

Demand for heavy steel continued to increase. Total construction steel awards this year run to above 800,000 tons, a gain of 62 per cent over the corresponding period of 1935.

Finishing mill production schedules were higher because of the larger output in the tin plate division. This activity is likely to slacken as tonnage requirements for tin plate users are met and the normally dull period is at hand.

Another encouraging trend is the increased buying of iron and steel for agricultural use.

Sustained buying by the automotive industry has also been a factor in improving the iron and steel operations in recent months. This increased outlet was not anticipated, for it was thought that motor vehicle makers would require less steel at this time of year after they changed their season for the introduction of new models.

Railroad buying has improved. What is said to have been the largest car order since 1929 was placed among several companies by the Southern Pacific Railroad for 2,950 freight cars and 20 baggage cars to cost about \$8,000,000.

Forecast Price Advance

Reports are that steel rail prices which have remained at the level established in 1933-34 are likely to advance in the fourth quarter.

Birmingham District Business

The Birmingham district has felt the improvement in general steel demand. The ingot production and steel making rate has been at about 69 per cent as compared with 30 per cent a year ago. With

the closing down of the Ensley plant after a steady run since February 3, the operating rate is over 58 per cent. Fabricators have been operating at from 50 to 80 per cent of normal, with orders in hand to keep them at this rate for about two months.

Steel Industry Threatened by Labor Agitators

The cloud on the American iron and steel industry horizon results from the plans of labor organizers to force unionization of the iron and steel industry at a time when this \$5,000,000 industry, employing some 500,000 workers—and last week reported the highest number employed since September 1930—is beginning to see its way out of the depression.

The American Iron and Steel Institute, representing more than 95 per cent of the industry, declares that as

"Persons and organizations not connected with the industry have taken charge of the campaign, the steel industry will use its resources to the best of its ability to protect its employees and their families from intimidation, coercion and violence and to aid them in maintaining collective bargaining free from interference from any source.

"The objective of the campaign is the 'closed shop,' which prohibits the employment of anyone but a union member. The steel industry will oppose any attempt to compel its employees to join a union or to pay tribute for the right to work. No employee in the steel industry has to join any organization to get and hold a job. Employment in the industry does not depend upon membership or non-membership in any organization. Advancement depends on individual merit and effort. These are fundamental American principles to which the industry will steadfastly adhere.

"The steel industry is recovering from six years of depression and huge losses, and the employees are now beginning to receive benefits of increased operation. Any interruption of the forward movement will seriously injure the employees and their families and all businesses dependent upon the industry, and will endanger the welfare of the country."

That radical agitators are seeking to stir up labor strife in the steel industry is indicated by the statement of Morris Childs of the Communist party who is quoted as saying:

"The Communists are ready to play an important role in that battle. Our task is to mobilize our entire force behind the steel workers and place our organization in the mills to be ready for the strike when it comes."

Some Recent Orders

Illustrating the diversity of requirements among recent orders placed are the following:

The Southern Pacific Railroad has ordered 550 automobile box cars from General American Transportation Corp.;

500 50-foot steel sheath box cars each from the Pressed Steel Car Co., Bethlehem Steel Corp., and Pullman-Standard Car Manufacturing Co.; 250 from the American Car & Foundry; 250 50-foot steel sheath box cars from Mt. Vernon Car Manufacturing Co.; 20 80-foot steel baggage cars from St. Louis Car Co. The Southern Pacific shops at Sacramento, Cal., will construct 200 flat cars, 100 gondolas and 150 stock cars. Chrysler is reported to have bought 20,000 tons of steel for the 1937 models and to place additional orders. The United States Pipe & Foundry Co. is furnishing 190 tons of 6 to 24 inch pipe for Alhambra, Cal., among other pipe orders of over 9,000 tons in the past two weeks. The Bessemer plant of the Pullman-Standard Car Manufacturing Co. resumed operations to complete an order for 100 70-ton phosphate cars requiring about 1500 tons of steel. The Virginia Bridge Co. received an order for 1300 tons of structural steel, 850 tons for a Louisville grade crossing project and 450 tons for the Montgomery court house.

While many of these orders are of the smaller variety, nevertheless they represent in the aggregate a tonnage demand responsible for the comparatively high operating rate in the steel industry.

Structural Steel Business Highest Since 1931

Bookings of fabricated structural steel during May were 39 per cent larger than for April, and 141 per cent larger than for May, 1935. Business booked during the first five months of this year was 52.2 per cent of normal, and the highest recorded since 1931. With the greater increase in building and construction contracts let during June, it is likely the current fabricated steel business will show further gains.

Steel Industry Expansions

Reported authorization by the United States Steel Corp. for the construction of a cold rolled reduction mill by its subsidiary, the Carnegie-Illinois Steel Co. at Gary, Ind., involves an expenditure of \$5,500,000. This is in addition to other large expenditures by the Steel Corporation previously announced for the Gary Works.

The Republic Steel Corp. will purchase, subject to Court approval, the property of the Canton Tin Plate Corp., Canton, O., consisting of 9 tin mills with complete finishing departments which employ in normal times about 700 men.

Plans for the acquisition of the Milcor Steel Co., with plants at Milwaukee and Canton, O., by the Inland Steel Co., of Chicago, were reported, involving about \$5,600,000.

Production of tin plate is reported to start soon by the Crucible Steel Co.'s plant at Pittsburgh. It is understood that a new process is involved in the undertaking.

WE HAVE AN INTEREST IN YOUR BUSINESS



If you MAKE, SELL or USE steel products, you can count on GULFSTEEL'S interest and co-operation.

This company is OF the South—FOR the South—and BY the South. Our own prosperity depends upon the prosperity of the industrial and agricultural South.

If you are a Southern fabricator of steel products, a Southern dealer selling fence, roofing, nails, etc., a Southern farmer using woven-wire fence to increase your income — GULFSTEEL'S pulling FOR you and WITH you.

YOU are our market. You can depend on us to do all we can to help YOUR business grow, and keep on growing.

GULF STATES STEEL COMPANY
BIRMINGHAM, ALABAMA GADSDEN, ALABAMA

GOOD ROADS AND MOTOR TRANSPORT

States Survey Highways

Studies To Pave Way For Development Of Long-Term Highway Programs

THIRTY-SIX state highway departments, with the cooperation of the Bureau of Public Roads of the U. S. Department of Agriculture, have now in progress or will shortly begin planning surveys to obtain information to put future highway improvement on a sound, business-like basis.

In the past, attention has been centered on improvement of the main through highways. In the future, more attention must be given, say highway officials, to improving secondary and feeder roads and to providing additional facilities where main highways pour their traffic into cities. At the same time, the main highways must be maintained and further improved to serve an increasing volume of traffic. In-built safety features must be provided.

Long-time programs can be intelligently planned only when information is available as to which roads should be improved first. To determine this road-building officials need definite facts as to traffic counts, construction costs, maintenance costs, how much taxes can be fairly imposed for highway use, and where the taxes should be imposed from the viewpoint of highway usage.

Each of the state surveys is designed to collect information along these and additional lines. Each involves three separate branches, namely, a highway condition survey, a highway traffic survey, and a highway finance survey.

Since highway transportation is now one of the nation's major industries, its future development, the Bureau of Public Roads feels, should proceed according to a comprehensive plan covering a period of years, and based on economic and social needs.

Survey work is under way in the following states:

Washington	New Mexico	Wisconsin
Oregon	Nebraska	Illinois
Nevada	Kansas	Michigan
Idaho	Oklahoma	Indiana
Utah	Minnesota	Ohio
Arizona	Iowa	Pennsylvania
Montana	Missouri	Florida
Wyoming	Arkansas	North Dakota
Colorado	Louisiana	Virginia

Surveys are scheduled to begin shortly in:

California	Texas	West Virginia
South Dakota	Alabama	Tennessee

To cover the cost of surveys, there is available in each state 1½ per cent of the following funds, as apportioned to the State: the 1935 Public Works Fund as provided under the Hayden-Cartwright Act; the 1936 fiscal Federal Aid Apportionments; the Works Progress Administration Highway and Grade-crossing Apportionments. In addition to these funds, the state must match the monies of the Federal Aid funds used.

Cotton In Road-Building

Thirty-two States To Use Concrete Curing Mats and Reinforce Low-cost Roads With Cotton

REQUESTS for cotton fabric and cotton mats to be used in tests of new uses for cotton in road construction have been made by 32 states to the Agricultural Adjustment Administration.

A total of 6,167,000 square yards of cotton membrane will be required as reinforcement in bituminous surface-treated highways for 575 miles to fill the requests of 24 of the 32 states.

Requests of 23 of the 32 states total 89,500 cotton mats for use in curing concrete highways.

In the South 10 states have asked for 3,894,759 square yards of cotton membrane for approximately 369 miles of road and 9 states requested 35,115 cotton mats.

The experimental project to increase use of cotton is being financed with funds made available by the amendments to the Agricultural Adjustment Act, approved last August.

Refrigerator Trailers Of Stainless Steel

Light-Weight Trailers For Hauling Perishable Products Added To Davidson Fleet

TWO light-weight, stainless steel refrigerator trailers, the first of this metal and design, were built by the Edward G. Budd Manufacturing Co., of Philadelphia, Pa., for the Davidson Transfer & Storage Co., of Baltimore.

Designed to resist corrosion and reduce weight, the trailers are being used for hauling cheese, mayonnaise, yeast, meats and other perishable products.

The refrigerator system, installed by Fitz Gibbon & Crisp, Inc., of Trenton, N. J., consists of three ice fan cooling units using dry ice and designed to be free from gas and to maintain constant temperatures within varying narrow

Before Long Motorists Will Be Rolling Down To Rio

PROGRESS is reported in linking the Pan-Americas with modern highways. Before long American motor tourists will be planning their vacations over the highways of Central and South America. Another link in the Texas-South American highway is announced in the formal opening of the 775-mile stretch from Nuevo Laredo, to Mexico City. Eventually highways extending across the Isthmus of Panama and along the Pacific and Atlantic coasts will form a net-work, reaching capital cities in North, Central and South America.

Vitrified Paving Brick

REVISION of variety standards for the manufacture of vitrified paving brick, approved by the industry, became effective June 30 under "Simplified Practice Recommendations R1-36, Vitrified Paving Brick." Original recommendations, which became effective in 1922, made possible a reduction in variety from 65 to 11. The current revision lists a total of four varieties.

limits. Fans were installed on the bunkers to speed-up circulation, and also to lower the temperature somewhat faster than would be done normally.

The trailer body may be divided into either two or three compartments, separated by 3-inch flexible Kapok partitions, in each of which a fixed temperature can be maintained without affecting the temperature in the other two.

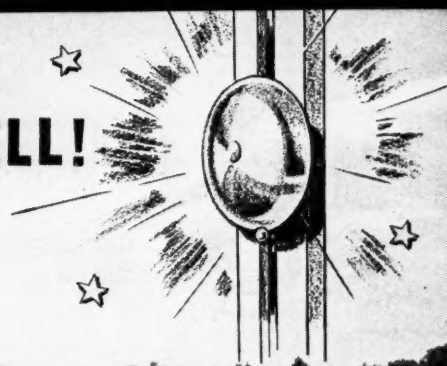
The stainless steel body, 24 feet long, is mounted on a light-weight, fully automatic trailer chassis developed by the Fruehauf Trailer Co., of Detroit, Mich. Its floor is covered with a one-piece stainless steel pan with 6-inch flaps extending up on all sides, permitting the flushing and draining of the body without affecting the insulation under the floor. A self-bailing, sealed drain is located in each corner.

Insulation consists of Kapok in the sides and roof, as well as in the partitions, and Balsam wool and spun glass in the floor.



MANUFACTURERS RECORD FOR

Again ALLIS-CHALMERS RINGS THE BELL!



Tandem drive SPEED PATROL

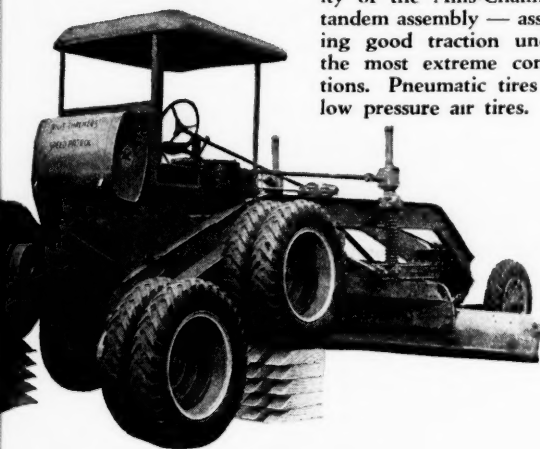
Note the extreme flexibility of the Allis-Chalmers tandem assembly — assuring good traction under the most extreme conditions. Pneumatic tires or low pressure air tires.

RECENTLY we made this sporting suggestion: "Compare the Allis-Chalmers Speed Patrol before you buy!" Many buyers did . . . and the demand for Speed Patrols has increased by leaps and bounds. Now . . . the exclusive quality features of the A-C Single Drive units are also available in Tandem Drive Speed Patrols. Wherever working conditions call for the tandem drive principle . . . in oil mix or ditch work . . . in extreme sand or snow removal . . . on steep slopes—this is the Patrol you want. Tandem assemblies pivot on the rear axle with unusual freedom . . . assuring traction for all wheels at all times . . . regardless of ruts or ditches. This is accomplished without using a differential. Dependable, quiet gear drive—with no chains to stretch or wear. Simple, easy-to-adjust hydraulic brakes. Designed and built entirely by ONE company . . . with branch houses and dealers everywhere. Ask an A-C dealer.

- ★ NO. 42 AND NO. 54 SIZES
- ★ FOUR WHEELS OR EIGHT
- ★ DEPENDABLE GEAR DRIVE
- ★ NO DIFFERENTIAL
- ★ HYDRAULIC BRAKES
- ★ GREATER BLADE BASE . . . GREATER PRESSURE
- ★ ALL BOLTED CONSTRUCTION
- ★ COMPLETE WEAR TAKE-UP
- ★ CORRECT SPEEDS FOR OPERATION AND TRANSPORT
- ★ BUILT, BACKED AND SERVICED BY ONE ORGANIZATION!

ALLIS-CHALMERS

TRACTOR DIVISION—MILWAUKEE, U. S. A.



LUMBER NEWS OF THE MONTH

Many Subjects To Claim Attention of Lumbermen

Joint Meeting Of National and West Coast Groups Occasion For Exchange Of Ideas On Common Problems

LUMBERMEN from all parts of the nation will attend the lumber "Congress" to be held the week of July 20 at Seattle, Wash. It is the occasion of the summer meeting of the directors of the National Lumber Manufacturers Association with the West Coast Lumbermen's Association acting as host.

The first business meeting will be a joint session of the West Coast Trade Promotion Committee with I. N. Tate, St. Paul, Chairman of the National Lumber Manufacturers Trade Promotion Committee, on July 21; and a meeting of the National joint committee on forest conservation following.

On July 22 there will be an open forum on lumber industry interests, problems and undertakings, with T. V. Larsen, President of the West Coast Lumbermen's Association presiding. Representatives of each lumber-producing region will summarize conditions, prospects and significant developments in his territory, detailing particularly matters of general industry importance.

On July 23 the directors of the National Lumber Manufacturers Association will hold open meetings, with President W. B. Nettleton of the Association presiding.

Other topics to be discussed are: The trend of Federal legislation; developments in research; prefabrication; lumber-built house; fire resistant treatments and other methods of processing lumber; termite problem, lumber exports, etc.

Nursery Annually Produces Trees For 78 Square Miles

A. W. HARTMAN, supervisor of the Kisatchie National Forest, estimates that one year's production at the Stuart Nursery, established by the U. S. Forest Service on the Kisatchie National Forest at Pollock, near Alexandria, La., and named in memory of Major Robert Y. Stuart, late Chief of the Forest Service, will plant about 78 square miles.

The Stuart Nursery, which began operations in 1934, is playing an important part in the forest conservation program for the Southern States. Trees produced at the nursery are being used in the reforestation of cut-over and burned-over lands in the National Forest purchase units. During the first year of its operation it produced nearly 10,000,000 tree seedlings, mainly longleaf pine with smaller quantities of slash and loblolly pine. The young trees were used for plantings in Louisiana, Mississippi, east Texas, Florida and Alabama National Forest areas.

U. S. To Sell Timber

6,000,000 Feet a Year From Wambaw Forest, South Carolina

PRIVATE owners of timber properties are to face additional government competition. The Government is offering to the highest bidder, timber cutting rights in its Wambaw (S. C.) forest, according to the Charleston office of the United States Forestry Service.

The Wambaw holdings are situated in Charleston and Berkeley counties. It is estimated that at least 6,000,000 board feet of timber can be cut in the area each year during the next 20 years without over-drawing on the annual growth for the same period.

With an average price of timber ranging from \$5.50 to \$6, the income from the sale of timber a year would be approximately \$35,000. Of this amount, 25 per cent is proposed to go to the county governments, and 10 per cent retained for improvements of roads, communication lines, etc., in the Wambaw forest.

Plans are under way, also, to construct in the Sumter National Forest eight new steel fire towers, approximately 100 miles of telephone line, additional truck trail development, construction of recreational areas, camp grounds, development of management plans for timber resources, and management of wild life and grazing resources in the national forest.

New Type Timber Bridge

Prefabricated Timbers and Metal Connectors Feature Novel Structure

OF interest to the lumber industry and engineers are two new timber bridges, utilizing split-ring connectors in their construction, which are being erected at Port Angeles, Washington. The sub-structure is of creosoted framed bents built up with TECO split rings supplied by the Timber Engineering Co., the promotion subsidiary of the National Lumber Manufacturers Association.

Each of the bridges is 750 feet long, 100 feet in height, with 24 feet of clear roadway in addition to 4-foot sidewalks on each side. They are of the composite trestle type, with concrete decks bonded to creosoted timber stringers with spikes, etc.

Technical Bulletin No. 1 of the Oregon State Highway Department indicates that this composite type of bridge has double the load-carrying capacity and four times the stiffness of the timber stringers alone.

Lumber for each job totaled 800,000

Forest Research Progress Southern Experiment Station Active Along Many Lines

PROGRESS of Federal forest research in the South during the past year is covered in the fifteenth annual report of the Southern Forest Experiment Station, New Orleans, by E. L. Demmon, Director. The report also discusses in detail the Station's research findings and program, as well as its plans for future work.

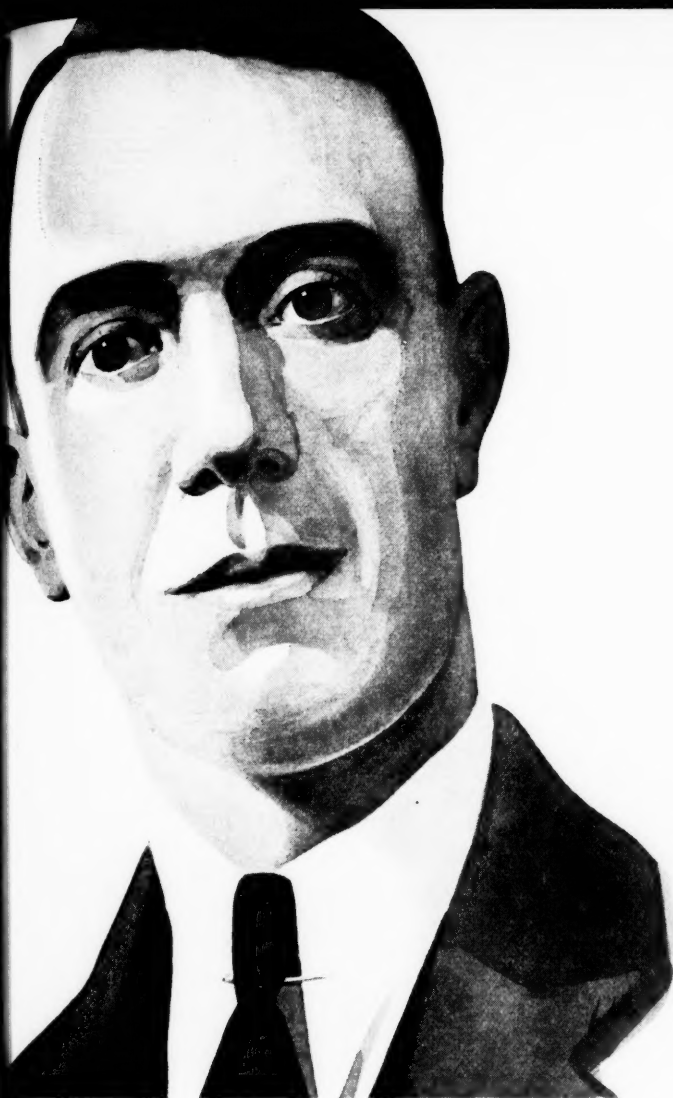
The Southern Forest Research Advisory Council, comprising 21 business, professional, and scientific men appointed by the Secretary of Agriculture, acts in an advisory capacity to the Station.

Included in the Station's work was the release of U. S. Department of Agriculture Technical Bulletin No. 492, "Artificial Reforestation in the Southern Pine Region," completion of the forest inventory on 107,000,000 acres by a line plot survey, bringing the total area completed on December 31, 1935, to 186,000,000 acres, and making available some of the outstanding findings of this survey; additional development in buildings and equipment, and in forest condition, of four experimental forests, one each in Arkansas, Louisiana, Mississippi, and Florida; a truck logging and mill scale study in shortleaf and loblolly pine indicated that light cuts (minimum of 500 board feet per acre) can be profitably made; cost production studies in worked-out turpentine longleaf pine showed a profit for all sizes of trees when cut into pulpwood, but indicated a loss when trees below 10 inches in diameter (breast high) are used in the production of resin barrels; completion of a survey of land ownership, valuations, taxation, tax delinquency, and public finance in southeastern Georgia and northeastern Florida; and formulation of rules and standards to govern planting of impoverished and eroding old fields in north Mississippi.

The latest annual report discusses the progress in current investigations and plans for 1936. Chapter headings include:

Fire prevention, damage, controlled burning, management, thinning, pruning, forestation, measurements, naval stores, methods of chipping, erosion-streamflow, forest economics, loblolly-shortleaf pine-hardwood forest region, slash-longleaf pine Naval-stores region, new public domain, forest survey conditions, pulpwood, insect control.

board feet of prefabricated Douglas fir, which were "Connected" with 8,000 4-inch split rings. A unique feature of these bridges is that they are so detailed and articulated that in case of necessity any individual member—even to the stringers supporting the concrete slab—can be removed and replaced without disturbance of any adjacent work, providing a bridge of economical and convenient repair and maintenance.



"After TALKING TO
MARION CLUTCH TYPE
OWNERS . . . TO BUY ONE
OURSELVES WAS THE
OBVIOUS THING TO DO"
SAYS

George L. Potts

President
POTTS & CALLAHAN CONTRACTING CO., INC.
Baltimore, Md.

Marion shovels are not new to 'Bill' Callahan, my partner, and me. Our first shovel was a Marion Type 41 steamer which led to the purchase of other Marions of various sizes and capacities. When the question of a small shovel came up we watched several Marion Clutch Type Excavators very critically . . . talked to several owners . . . compared their production records . . . and consistent high yardage performance with low maintenance cost led us to buy the Marion Type 371 Clutch Type excavator we now own. It is a real machine." " " " " " "

MARION

CLUTCH TYPE EXCAVATORS

MACHINE FOR EVERY MATERIAL HANDLING JOB

WRITE FOR BULLETIN DESCRIBING MARION FEATURES
THE MARION STEAM SHOVEL COMPANY
MARION, OHIO, U. S. A.

The Marion Type 371 owned by Potts & Callahan Contracting Company, Baltimore, Md., which along with two other Marions handled 252,000 cubic yards of material in 90 days in digging the foundation for the Department of Interior Building, Washington, D. C. It was on the job 16 hours a day.



Remedial Measures For Coal Industry's Ills Suggested

Lewis C. Karrick Declares:

"One cent assessment per ton of coal produced would provide sufficient funds to carry on researches that would solve the industry's problems and permanently improve labor conditions."

"IF the bituminous coal producers were free and inclined to act cooperatively, they could have prevented encroachment of other fuels into their logical markets, and they can now get back a large part of it."

The above is the statement of Lewis C. Karrick, consulting engineer, of Salt Lake City, Utah, who has been directing coal-products developments at the University of Utah in its School of Mines and Engineering for the past six years, and who directed similar studies in the United States Bureau of Mines for seven years.

In analyzing the present situation in the coal industry, Mr. Karrick takes occasion to point out that while coal-products researches and developments are expensive in time and money, that much has been done in the Federal Government's laboratories and by other public and private investigators as a result of which "much technological information is now available for the building of a coal-products industry."

"We have found that most bituminous coals will produce gas of fuel value equal to most natural gas, also solid smokeless fuels which are entirely satisfactory to the user in his domestic heating equipment, and crude oils which can in most cases be cracked and refined into gasolines superior to the present petroleum gasolines," reports Mr. Karrick.

"These products are obtainable by the low-temperature carbonization of the coals—an industry that existed in the United States up to the year 1859, and which has recently received an undeserved 'black eye' through misdirected and unscrupulous work of interested persons," Mr. Karrick adds.

"If the coal industry would assess itself one cent per ton of coal mined in the United States, the \$1,000 per day thus made available for research could, with competent leadership and uninfluenced direction, quickly demonstrate the economic feasibility of this needed new industry.

"Truly, science and engineering can solve any remaining problems that relate to unusual coal and special markets for products.

"Coal can then produce products, which will stabilize seasonal production, genuinely solve the smoke problem of American cities, and render a great service to labor permanently."

\$250,000 Milk Plant Boon To Texas County

**Carnation Milk Co. Establish Plant With
Daily Capacity Of 200,000 Pounds**

THE Carnation Milk Company's evaporating plant, recently completed at Sulphur Springs, Tex., represents an investment approximating \$250,000.

This project, culminating six years of effort, affords producers in this fertile, diversified agricultural section, a choice market for practically all types of milk products. Fine herds have long been the pride of the area. Hopkins County, in which the new condensory is located, with approximately 23,000 head of Jersey cows, in 1934 stood among the ten high counties in the United States in registered Jersey cattle. It holds first place among all counties of Texas.

The large investment which Carnation has made at Sulphur Springs was based on these findings, coupled with favorable climatic conditions, well-watered pastures and prolific feed crops and demonstrates the faith of the company in the future possibilities of East Texas as an important milk production area.

Indications are that the establishment of the plant will act as a spur to more stable, intelligent operation of the farms in this vicinity, making possible rehabilitation of the soil, the establishment of a continuing pay-as-you-go system, while providing a semi-monthly pay day in place of once-a-year as with cotton.

It is anticipated that it will require two years to obtain capacity production of 200,000 pounds of milk daily.

In Hopkins County the Texas Power & Light Co. has built seventy miles of rural power line to serve 400 homes, and surveys are under way for forty-five additional miles of lines to serve 350 homes. Hopkins County farmers are putting electric current to wide use.





ROT PREVENTED

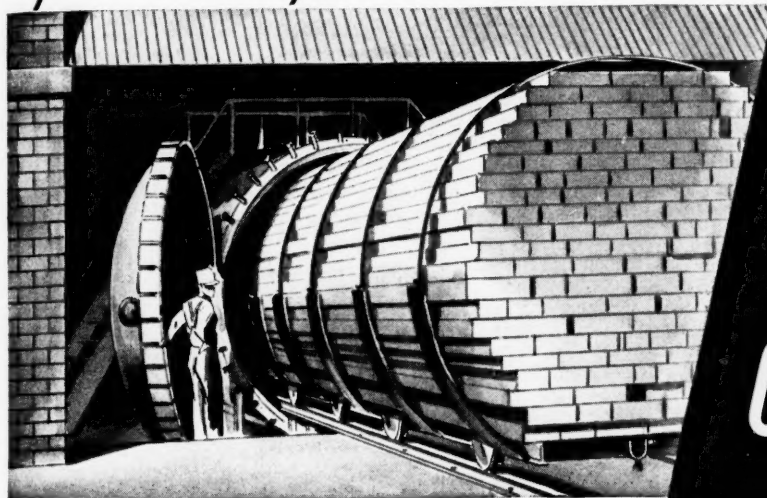


TERMITES REPELLED

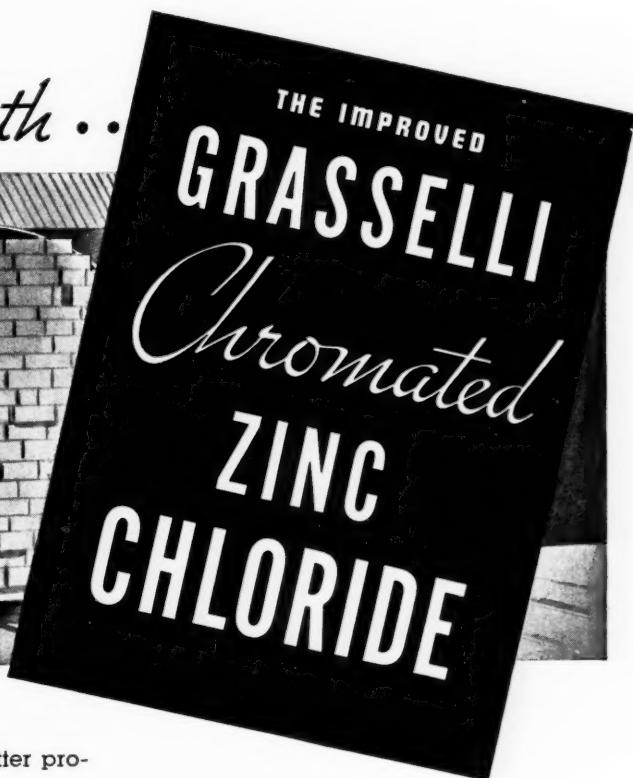


FIRE HAZARD REDUCED

by treating timbers with . . .



Commercial Pressure-Treating Plants are located near you for prompt and efficient service. Write us for their names.

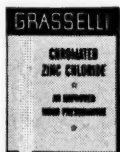


The ever present problem of better protection of mine, mill and highway timbers against Rot, without increased maintenance and installation costs, is now solved by a notably improved zinc chloride, *Grasselli Chromated Zinc Chloride*; it has definitely greater preservative properties, as well as being termite repellent and fire retardant.

No stronger argument can be made for

the Zinc Chloride treatment of wood than its outstanding economy. Wood treated with this improved preservative *does prevent decay* thereby averaging three to six times longer life than untreated wood—eliminating many costly replacements and reducing maintenance expense.

It is clean, odorless and also paintable.



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**"MILLERIZED"
SHINGLES & ROOFING
WITH NEW PATENTED
SEALED GRANULES**

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If you are not familiar with this new patented Certain-teed process which eliminates staining, blooming, blistering and shedding of granules from Certain-teed asphalt roofings, shingles and sidings, apply for further information to the following offices.

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Baltimore, Maryland, 1309 Lexington Building
Certain-teed Products Corp. of Va., Ninth and Main Sts.,
Richmond, Va.

Plant located at Savannah, Georgia

CERTAIN-TEED PRODUCTS CORPORATION

General OfficesNew York, N. Y.

WHICH CONVERSATION TAKES PLACE IN YOUR FACTORY?

THIS

Supt: "I guess we will have to shut down for a week, to repair the holes in the floor; they are getting deeper and more dangerous all the time."

Foreman: I don't see how we can. It is our busy season, yet, I suppose it is too dangerous a condition to let ride until the rush is over.

OR THIS

Supt: Before these holes in the floor get any larger, we had better resurface them with Rockstone—that new material that gives such smooth and lasting results. We have several drums on hand.

Foreman: O.K. with me—I can start Saturday and have the floor ready for Monday morning. It is a good thing we have this material, as we are too busy to shut down just now.

ROCKSTONE ROCKSTONE

A patch in time—Saves the floor.

**THE ROCKSTONE CO. 250 SOUTH BROAD ST.
PHILADELPHIA, PA.**

AND SO IT GOES

Glass Blackboards Have Moved In

those who learned their three R's when McGuffey's Reader was the "Book of the Month" every month in the little red school down the road may be startled to learn.

Glass scientists—modern magic workers whose art recently caused a fakir in far-off India to write to them in Toledo about the tempered plate glass that bends but does not break under the weight of an elephant—announce results of tests in schools equipped with blackboards of glass in the Maumee Valley County Day School, near Toledo, and in Kingsport, Tenn. Green boards were installed in the former and black in the latter.

• • •

Learn While You Ride

is possible in a train, equipped with a public address system, recently placed in operation by the French North Railway. While the train is designed primarily for excursion tours, during the course of which informative announcements concerning points of interest along the route are made, it was recently chartered by a chemical company to transport guests on a tour of its huge plant. While en-route, technical explanations and announcements were transmitted to the passengers.

• • •

\$1,600,000 Elevators For Fish

are being provided by the War Department at Bonneville Dam on the Columbia River, for the Government wants to perpetuate the Columbia River's \$10,000,000 fishing industry and so salmon will be helped by "ladders" and "elevators" to reach the headwaters where the females lay their eggs. In obedience to a natural urge, the salmon return to the headwaters in which they were born. So the Government is taking steps to aid the upstream migrations.

• • •

A Railroad Always On The Upgrade

is that near Ripple, Ore., said to be the world's steepest standard-gauge line. Something over 3400 feet long, it starts up on a 28% grade, continues for a while on a 75% grade, and as it nears the top of the incline, drops down to a 50% grade. It transports logs from a 300,000,000-foot stand of timber growing on high mountain ridges. Between the termini, an ordinary railroad would traverse 15 miles.

• • •

The Tin Can Age Is Upon Us

yea, verily, if we are to judge from reports which say the City Engineer at Decatur, Ga., is building streets with cast-off tomato, corn, lubricating oil, beer or what have you had cans. The cure, it is said, for a hole or rough spot is more cans—of course, compressed into place with a heavy road roller and surface treated.

Cans retrieved from Baltimore's rubbish and garbage incinerator are being consumed by a large chemical plant in making paint pigments, taking the place of iron filings and planings from machine shops.

• • •

Tinplate To Make A 100-Foot Band Around The Earth

was produced last year, reports D. J. MacNaughtan, of London, director of the International Tin Research and Development Council. The food cans made from a portion of the tinplate produced would be sufficient to build a pyramid $2\frac{1}{2}$ times as high as the great pyramid of Egypt. If all the tin used in solders last year were used as tin-lead alloy, there would be sufficient to provide 250 separate solder seams, running lengthwise around the band of tinplate above mentioned.

The consumption of tin in 1935 as an anti-frictional metal would be sufficient to provide a 3-inch tube running from London to Salt Lake City, made entirely of bearing shells laid end to end. Tin foil produced last year was sufficient to coat a tower of the same ground dimensions as the Empire State Building but 16 miles high, assuming half of the space was occupied by windows.

New Rays That Halt Food Decay

are developed by a gas-filled tube, emitting invisible rays in the ultra-violet band. Through inhibiting mold and bacterial growths, the rays prevent spoilage of foods. The slender tube, consuming only a negligible quantity of electricity, is also credited with the power of purifying air.

• • •

"Horse and Buggy Days" Are Here

if we are to take the word of harness dealers. In six years harness manufacture has gained 25%. The demand for horses is strong. The price for good draft animals is high. In many fields under tillage once again are seen teams, but this does not mean that the implement makers have suffered. The sale of trucks and automobiles is almost back to the 1929 peak. The old and new seem to be making progress together. Apparently the efficient farm of the future will balance better between the old and new ways.

• • •

Weather Data "Wrapped in Cellophane"

may soon be the thing. Experiments by Drs. L. F. Curtiss and A. V. Astin, of the U. S. Bureau of Standards, are planned to determine if cellophane-made balloons can reach a height of 28 miles as compared with rubber balloons, filled with hydrogen, which reach a height of 20 miles. If the tests prove successful, it will be possible to obtain much additional information of value on the origin of our weather and the nature of cosmic rays.

• • •

A Voice Of Warning From The Skies

may hereafter tell of approaching hurricanes, and thus save life and property, thanks to tests by the U. S. Coast Guard's communication division. While broadcasting from airplanes is quite commonly practiced, the Coast Guard says it has never been achieved before in such volume from a mechanism weighing only 110 pounds, and which can be installed in a very few minutes.

• • •

Down To Mines For Cheese

is disclosed by researches of the U. S. Department of Agriculture. L. A. Rogers of the Bureau of Dairy Industry says Pennsylvania coal mines have been found excellent curing rooms for domestic roquefort cheese. Whitewashed, partitioned, damper-controlled ventilation and with a temperature maintained at about 46°, abandoned mine shafts make ideal cheese factories.

• • •

A New Tailless and Baldfaced Sheep

the meat and wool of which are excellent, is among the striking changes in farm life forecast by recent developments of science set forth at the annual meeting of the American Society of Agricultural Engineers.

The breeding of plants to order, the home manufacture of power and cooking gas from old newspapers, cornstalks, peanut hulls and other farm waste were among the successful experiments discussed.

• • •

Yachtsmen Of The Air

held their annual regatta last month at Elmira, N. Y., and Richard C. duPont, internationally known glider pilot, set a new record by flying to Watkins Glen and return to cover a distance of 36 miles.

No wonder that every year the number of air-going yachtsmen grows. For instance, a two-seat sailplane climbed to 2500 feet in a flight consuming nearly 7 hours. Hence, the motorless flyer is confidently aiming at records, which a comparatively short time ago were considered only possible in high powered airplanes.

• • •

Glycerine From Rice Waste

is possible through perfection of a new process, using powdered rice, malt, sodium, sulphite and brewers' yeast, the Department of Commerce's chemical division announces. The cost is claimed to be relatively low, the equipment necessary consisting largely of vats, filtering apparatus and rotary machines.



Salt treated sub-flooring laid on Creosoted stringers and nailing strips, each treated by our Pressure Process.

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with 4 to 7 times the Abrasion Value
of ordinary cement floors

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Before you buy floors of any kind, investigate "Ven-ite"—the better, denser, stronger cement flooring.

Ven-ite Floors—designed to meet specific conditions—will withstand the heaviest industrial trucking. They are waterproof, dustless, highly resistant to most acids, unaffected by oil, grease, atmospheric conditions.

Ven-ite floors show the lowest per square foot per year cost of any floor. Let us send details.

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Industrial Crating, Box Shooks, Rough and Dressed Lumber, Oak Flooring, also Pinus Strobus Pattern Lumber, White Pine, N. C. Pine, Oak, Poplar and Chestnut.

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Correspondence invited.

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FINANCIAL NEWS

Tax Collections Increase

FEDERAL tax collections for the fiscal year 1935 totaled \$3,546,000,000, according to a study covering Government costs just completed by the National Industrial Conference Board. This figure is higher than for any year since 1921. The Board's analysis shows that 1935 tax collections were \$654,000,000 more than those for 1934.

Per capita Federal tax collections for 1935 were \$27.81; for 1934, \$22.84; and for 1933, \$14.20.

Income tax collections in 1935 represented 30 per cent of all Federal taxes. Tobacco taxes continue to rank first from the standpoint of yield. Receipts from tobacco sales for the fiscal year 1935 were \$459,000,000, the largest total in the history of the Internal Revenue System.

Foreign Investments Up

INVESTMENTS from abroad in American securities at the end of 1935 totaled approximately \$6,235,000,000 with about \$5,000,000,000 in stocks and bonds and other "long term" holdings. This represents a gain of more than \$1,000,000,000 in foreign holdings within a year, resulting from increased purchases by foreign investors together with an average increase of approximately 37 per cent in the average level of common stock prices.

British investments approximate 27 per cent of all foreign investments in this country.

About 34 per cent of the total of foreign investments in the United States is in American manufacturing enterprises.

The Bonus

THE final payment being made to the Veterans of the World War in the form of bonds totaling \$2,000,000,000, many of which are being cashed, is more than all the wages and salaries paid by railroads in 1935. It is also more than all the wages and salaries paid by the mining industry in 1935; exceeds wages and salaries paid last year by public utilities, as well as all 1935 Federal payrolls and all wages paid on Work Relief projects last year. The effect of the spending of any considerable part of this huge sums should be felt by all lines of industry.

McCarl Hits Federal Spending

JOHAN R. MCCARL was comptroller of the United States for fifteen years and should be in a position to speak accurately about the way public funds are handled in the Federal Government. He terms emergency Federal agencies as "loosely and extravagantly set up" and "tax consuming to the extreme." His comment is particularly interesting and important in view of the news released last month that all peace-time financing records were broken as the Government closed its books on the 1935-36 fiscal year. The Federal deficit amounted to nearly \$5,000,000,000 for the year. Expenditures totaled almost \$9,000,000,000 and the total public debt increased to only a little less than \$34,000,000,000.

(Continued on page 54)

For Facts On Virginia Business

Manufacturers who wish information about tax, labor and other advantages of Virginia as a location for industrial plants will receive prompt responses from inquiries addressed to First and Merchants.

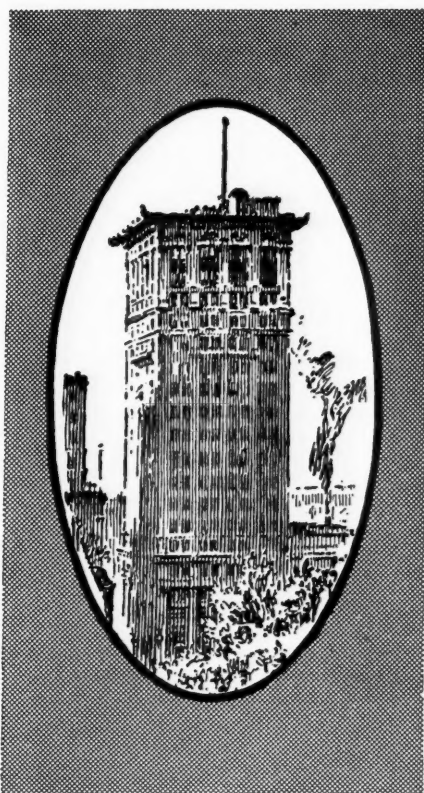
FIRST AND MERCHANTS National Bank of Richmond

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*One operating at four hundred degrees Fahrenheit,
the other at two thousand eight hundred degrees.*

Different products, different processes.

BUT, THE ONE FUEL—NATURAL GAS

If you need heat, you need gas.
Consult your local gas company.

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SOUTHERN NATURAL GAS COMPANY
Watts Building, Birmingham, Ala.

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One of a Million!

This tank has a capacity of one million gallons—one of the country's largest water tanks, and highest towers—built and erected by COLE for Gastonia, N. C. Dimensions: 56 ft. in diameter with a full hemispherical bottom, giving total depth of 62 ft. 16 columns comprise the supporting towers; the distance from base to top of tank proper is 200 ft. Note the attractive design, in addition to this substantial and practical structure.

This is only one of the hundreds of tanks we have fabricated for cities and towns from Kansas to Florida, and is only one of the many types we build. If it's a metal tank we can make it. PUT YOUR PROBLEM UP TO OUR ENGINEERING DEPARTMENT.

Let us know your needs for large vessels or other fabricated work of steel and alloy steel.

A Cole Steel Tank

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This applies to field as well as shop built equipment

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Every Davis Tank embodies the accumulated technical skill of forty-six years of tank-building. Just as cypress is without superior for investment economy, so are Davis Tanks unsurpassed in material, method of construction and reinforcing for service. A Davis water tank on a Davis steel tower, are plant purchases which have almost no limit of life and usefulness. Ask for new catalog of sizes and capacities.

G. M. DAVIS & SON
P. O. Box 5, Palatka, Florida



Financial News

(Continued from page 52)

"No More Loans"—HOLC

IN scores of branch offices throughout the United States, the Home Owners Loan Corporation, otherwise known as the HOLC, announced last month that no more loans would be made and that henceforth the Corporation will concentrate its efforts on collecting the money that has been loaned during the past three years. According to officials at the Agency, approximately \$3,000,000,000 has been advanced to distressed home owners.

A Banking Opportunity

W. RANDOLPH BURGESS, vice president, Federal Reserve Bank of New York, points out in a statement published in the current issue of *Banking*, that a central bank has on a number of occasions stood out against some governmental policy and secured its modification.

The point is well taken at a time when banks in this country are carrying more than half the load of the public debt and by so doing are financing the Federal Government in its many experiments inaugurated under the New Deal.

Perhaps a more positive position is called for on the part of banking institutions with regard to government loans, more nearly approaching their attitude toward private borrowers who do not live within their incomes. The idea has its practical disadvantages, of course, and would be impossible to carry out unless backed by public opinion to a greater extent than has been the case during the past four years, when banks, as well as other business institutions, have been held up before the country as "money changers in the Temple" who are responsible for our present difficulties.

Budget Estimates Off

GOING back to January of this year and the budget estimates submitted to Congress by President Roosevelt, it is found from the United States Treasury's financial condition at the end of June that the tax revenue was overestimated by more than \$300,000,000; expenditures underestimated by more than \$1,500,000,000, and the public debt total underestimated by more than \$3,000,000,000.

On top of this, Secretary of the Treasury Morgenthau promises an estimated ultimate reduction of \$4 billion dollars in the public debt to come from the stabilization fund and recoverable loans from home owners, farmers, railroads, banks, insurance companies, states and cities.

Many Government loans have been repaid, and it is reasonable to believe that at least a part of the public debt incurred by the Roosevelt Administration is made up by recoverable loans.

It certainly is to the advantage of private business to repay Government loans as quickly as possible to eliminate the temptation to political incumbents who may want to take advantage of the situation to exercise more direct control over the management of institutions in which public funds are, by these loans, temporarily invested.

Executive's Get 3 Per Cent of Payrolls

POPULAR belief that a large percentage of the nation's industrial payroll goes to a comparatively small number of executives is disputed in a survey by the National Association of Manufacturers covering 694 companies in 25 leading industries. Including bonuses the salaries of executives, comprise, on a basis of this survey, 3 per cent of the total payroll, .6 of 1 per cent of sales, and 13 cents for each share of common stock. In contrast, it is pointed out, taxes took 34 per cent of payrolls.

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**Structural Steel for all Industrial Structures,
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STRUCTURAL STEEL for BUILDINGS and BRIDGES

Capacity 1000 Tons per Month. 3000 Tons in Stock

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The Largest Steel Fabricators in the Carolinas
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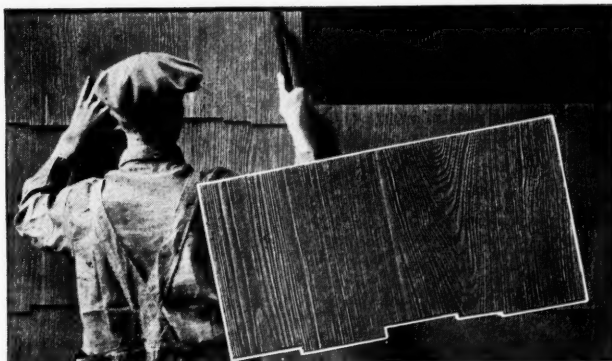
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NEW BEAUTY AND LIFE FOR MILL COTTAGES!



Several remarkable wood-textured asbestos-cement side-wall shingles, developed by Ruberoid, are giving new life and beauty to homes. These amazing and colorful building products have all the charm of the choicest cypress texture, but are rot-proof, fire-proof, termite-defying, and never require paint or stain to prolong their life.

When these siding shingles are applied over weather-worn walls, you have another money-saving advantage. The dead air space between provides effective insulation, reducing fuel costs and providing new comforts for your employees. It will pay you to investigate. Write for folders. Address Dept. MR-10

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Water Purification Plants

Any Type—Any Purpose—Any Capacity

Dry Chemical Feed Machines
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E. W. BACHARACH & CO.

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WATER FILTERS

Pressure and Gravity type for Municipal Water Supplies, Rayon Manufacturing Plants, Textile Finishing Establishments, Raw Water Ice Plants, Laundries, Etc.

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Filtration and Pumping Equipment

*For Water Works and Swimming Pools
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Acid Tanks	Digestors	Jacketed Tanks	Settling Tanks
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Coolers	Gasoline Tanks	Pressure Tanks	Vacuum Tanks

LANCASTER IRON WORKS

LANCASTER, PA.

INDUSTRIAL NEWS

Largest Hortonspheroid

The largest Hortonspheroid has been erected at Port Arthur, Texas, by Chicago Bridge & Iron Works, Chicago, Ill., for the Warren Petroleum Co. The tank, 141 feet 6 inches in diameter and 40 feet high, has a capacity of 100,000 barrels. Piling for the unit was driven by the Spence-Howe Construction Co., of Port Arthur.

Universal Form Clamp Branch

Universal Form Clamp Co., Jersey City, N. J., is operating a branch plant at 21 Carbon Place, Jersey City, with 10,000 sq. ft. of floor space. The plant will make a complete line of bar spaces and chairs and other accessories for reinforcing steel, and Twysties—a combination of tie and spreader for wall forms. Equipment for rolling threads on high tensile strength cold-rolled rods

for wall ties has also been installed. The company plans to eventually supply the Eastern territory from Maine to Florida from this unit and office. L. H. Umbach, general sales manager, is in charge of the plant at present.

White Buses At Spartanburg

Included in the transportation equipment of the Duke Power Co., operating a motor bus service at Spartanburg, S. C., are six White Model 20's which have run about 600,000 miles and are still performing satisfactorily, say company officials.

Acquires Aurora Metal Cabinet Co.

F. R. McQown, vice-president of All-Steel-Equip Co., Inc., Aurora, Ill., announces the acquisition of the operation and management of Aurora Metal Cabinet Co. of Aurora, manufacturing a complete line of steel filing equipment. All-Steel plans to continue the business aggressively and build the line to perfect it. Operation will be conducted under

the name of All-Steel-Equip Company, Inc., the line now including, in addition to the "Aurora" line, a wide range of steel cabinets, lockers, typewriter stands, special desk-hi, counter-hi, card cabinets, etc., as well as steel shop equipment.

American Mutual Enlarges Offices

American Mutual Liability Insurance Co., Boston, Mass., has enlarged its district offices in the Norris Building, 223 Peachtree street, Atlanta, Ga., which handles all service, claim and engineering details for policyholders in the metropolitan Atlanta area and supervises other offices in North and South Carolina, Florida, Alabama, Louisiana and Tennessee. The company has also enlarged its district office in the Public Ledger Building, Sixth and Chestnut streets, Philadelphia, Pa., which operates in the metropolitan area of Philadelphia and supervises offices throughout Pennsylvania, Southern New Jersey, Delaware, Maryland, Virginia, Ohio and District of Columbia.

Carborundum Sales Manager

Charles P. Knupfer, with headquarters at Niagara Falls, has been appointed as general sales manager of the Carborundum Co., Niagara Falls, N. Y., effective June 1. For many years Mr. Knupfer has represented the company as continental sales manager in Europe.

Industrial Materials Exhibit

The Fourth Annual Industrial Materials Exhibit, a cooperative exhibit sponsored by a group of industrial materials manufacturers, will be held October 5 to 10 at Hotel Roosevelt, New York. F. D. Bowman, advertising manager of the Carborundum Co., Niagara Falls, N. Y., is chairman of the exhibit committee. Other officers include: Treasurer, H. S. Christie, Spaulding Fibre Co., New York City; secretary, S. S. Kahn, Parker-Kalon Corp., New York; membership, B. D. Sanderson, Maas & Waldstein, Inc., Brooklyn, N. Y.; publicity, Allan Brown, Bakelite Corp., New York; C. J. Groos, Voonon Molding Co., New York; H. F. Roche, American Felt Co., New York; A. W. Ericsson, Ericsson Screw Machine Products Co., Brooklyn.

Caterpillar Engine Representation

H. A. Hicks Co., 1117 First Avenue, Columbus, Ga., has secured dealer representation for Caterpillar engines.

Buy Iron and Steel Plant

The North Works of the Ryan Car Co., Hegewisch, Ill., a Chicago suburb, have been purchased by Iron & Steel Products, Inc., Chicago, dealers in railway supplies and equipment.

Rubberseal Copper

The Mitchell-Rand Manufacturing Co., New York City, recently put on the market a product known as Rubberseal Copper, consisting of Anaconda "Electro-Sheet" copper from 2 to 7 ounces, coated on both sides with a special acid and alkali proof compound. It is described as being unaffected by heat, moisture or dryness, while being exceptionally flexible at all temperatures.

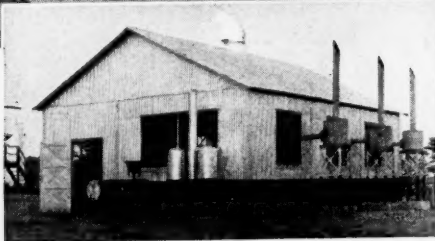
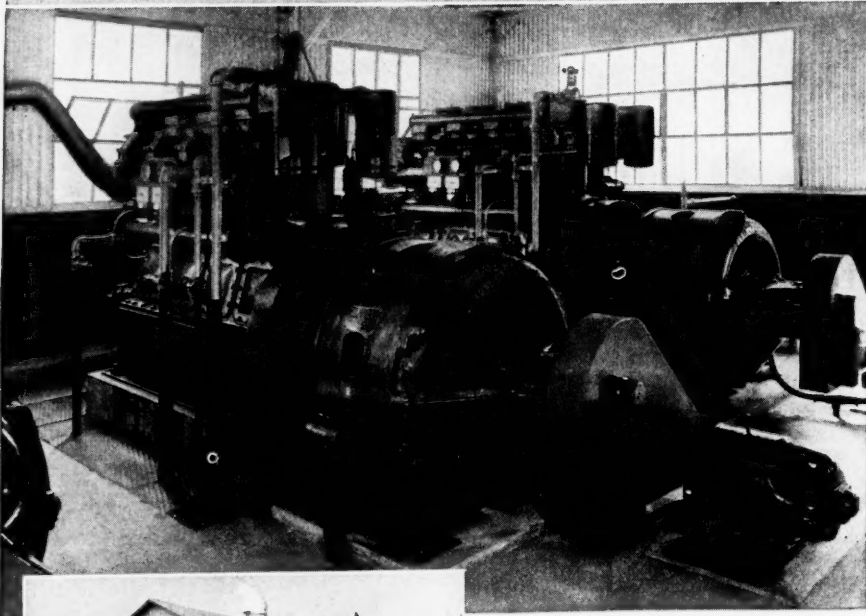
Bronze Castings for Fort Peck

A contract recently awarded the Bartlett Hayward Co., Baltimore, by the War Department, at more than \$1,000,000, calls for 1,500,000 pounds of bronze castings (high tensile and manganese bronze) for completing the emergency gate shafts for the Fort Peck dam tunnels at Fort Peck, Montana. In addition to special liner castings, averaging from 2 to 3 tons each for the shaft foundation, there are eight large emergency gates, and special hoisting machinery weighing 24 tons each, eight 8-inch bronze by-pass valves, concrete buildings, electric substation, etc.

"CORROSION RESISTANCE OF METALS AND ALLOYS"

A 492-page volume by Robert J. McKay and Robert Worthington, published by the American Chemical Society and issued by The Chemical Catalog Co., Inc., New York City, from the press of Reinhold Publishing Corp., also of New York. It was executed by arrangement with the International Conference of Pure and Applied Chemistry, which met in London and Brussels in July, 1919, and in conformity with which the American Chemical Society would undertake the production and publication of Scientific and Technologic Monographs on chemical subjects.

Meeting every demand for economical power production



Two of three Worthington 120-horsepower BG4 Gas Engines in electric power generating service at plant of Premier Oil Refining Company, Willow Springs, Texas. At left is shown the compact engine building.

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are demonstrating their many advantages to power users in a wide range of applications in the constantly expanding areas where gas power is available.

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25 to 1500 hp.

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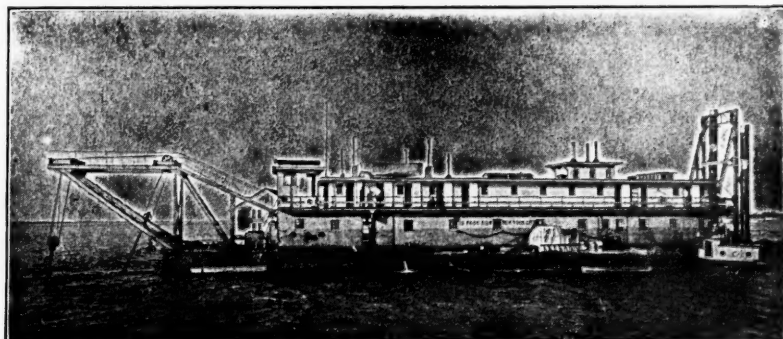
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*It Assures Greater Permanence—Unusual Beauty
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FOR BUILDINGS CUT-ASHLAR RUBBLE FOR MONUMENTS—
MARKERS—MAUSOLEUMS
Quarried by—
OGLESBY GRANITE QUARRIERS, ELBERTON, GA.
"Preferred for Better Memorials since 1893."

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FILTER GRAVEL**

Washed Sand and Gravel for Concrete
Roads and Buildings
Filter Gravel, all sizes—Building Bricks
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Multiple-Rope Clamshell
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ASPHALTIC ROADWAY GRAVEL
ROOFING GRAVEL CRUSHED STONE
ASPHALT FILLER DUST



American Limestone Co., Knoxville, Tenn.

CRUSHED LIMESTONE

Best for All Purposes

We manufacture all sizes of stone suitable for all
classes of road building and concrete work where
only a high-grade limestone is required.

Quarries opened up in 1912.
Capacity 8000 tons daily.

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Boxley, Greensville County, Va.

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TRADE LITERATURE

WATER WELL SUPPLIES—
Catalog No. 3—
Clayton Mark & Co., Chicago, Ill.

SLOW SPEED EXHAUST FANS—

Bulletin No. 1002-2—"Norblo" Slow Speed Exhaust Fans for use with dust collecting equipment which the firm makes and installs.
Northern Blower Co., Cleveland, Ohio.

RAILWAY TRACK GRINDING—

Booklet—Railway track welding and grinding, and how it prolongs rail life.
Norton Co., Worcester, Mass.

TEXTILE BILLING

Folder — Simplifying textile billing procedure.
Burroughs Adding Machine Co., Detroit, Mich.

TRUCK OPERATORS' HANDBOOK—

Booklet—1936 edition on tire and tire performances.
B. F. Goodrich Co., Akron, Ohio.

THOR HAMERENCH—

Circular — Thor Hamerench, a pneumatic tool combining actions of hammer and wrench and introducing new operating principle.
Independent Pneumatic Tool Co., Chicago, Ill.

TESTING MACHINES—

Bulletin 102—RD Type Universal Testing Machines.
Baldwin-Southwark Corp., Philadelphia, Pa.

FOR DUSTLAYING—

Booklet—Calcium Chloride for private dust-laying.
Solvay Sales Corp., New York City.

COPPER AND ITS ALLOYS—

Bulletin—Use of copper and its alloys.
Copper & Brass Research Assn., New York City.

TRACTORS—

Bulletin—New Caterpillar tractors, featuring Diesel RD4 "30";
Bulletin—"Caterpillar On The Farm";
Booklet—"The Story of Ten 'Caterpillar' Diesels." Reports Performance of ten "Caterpillar" Diesel engines which have seen varied service.
Caterpillar Tractor Co., Peoria, Ill.

CONCRETE TABLES—

Booklet—Tables and data on recent developments in concrete work.
Pennsylvania-Dixie Cement Corp., New York City.

GYPSUM LATH—

Bulletin—Fire-resistive qualities of gypsum and presenting results Bureau of Standards fire tests.
Gypsum Assn., Chicago, Ill.

NICKEL ALLOY STEELS—

Booklet—Buyers' Guide to Warehouse Stocks of Nickel Alloy Steels.
The International Nickel Co., Inc., New York City.

CANNING MACHINERY—

Supplemental Catalogue.
A. K. Robbins & Co., Inc., Baltimore, Md.

CENTRIFUGAL PUMPS—

Leaflet 2224—Type SS-B single suction end inlet centrifugal pumps.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.

ROAD EQUIPMENT

Catalog-L — Road maintenance and construction equipment.
Littleford Bros., Cincinnati, Ohio.

PYROMETERS—

Catalog N-33A — Micromax Thermocouple Pyrometers.
Leeds & Northrup Co., Philadelphia, Pa.

ELECTRIC DRILL—

Mailing Piece—In shape of electric drill, presenting complete details of the company's latest electric tool development—"Midget" Electric Drill.

UTILITY COMPRESSOR—

Bulletin SP-1953—New type, easily moved compressor designed for use by public utility companies and others.
Chicago Pneumatic Tool Co., New York City.

HYDRAULIC TEST LABORATORY—

Bulletin—Activities of research and testing department of manufacturers of Pomona Turbine Pumps.
Pomona Pump Co., Pomona, Cal., Los Angeles, Cal., and Chicago, Ill.

SPEED REDUCERS—

Bulletin 1100—Parallel shaft speed reducers, with both sleeve and roller bearings, 56 sizes, from 1 to 1000 h.p. at 100 r.p.m., with 45 standard ratios;
Bulletin 2100—Right angle speed reducers, horizontal and vertical types, covering ratio range from 1.5:1 to 518:1 and ratings of 1 to 1200 h.p. at 100 r.p.m.
The Falk Corp., Milwaukee, Wis.

STEEL DATA BOOK—

Booklet—Ryerson Steel-Service, Section 5.
Joseph T. Ryerson & Son, Inc., Chicago, Ill.

ROCK DRILL MOUNTING—

Bulletin No. 2253 — Light-weight wagon mounting for fast and powerful rock drills to handle 20-foot steels and accommodate 6-ft. steel change.
Ingersoll-Rand Co., New York City.

LIGHTING FACTS—

Catalog — "Datalog," on complete Holophanes line of newest equipment for scientific lighting.
Holophane Co., Inc., New York City.

BONDED PAVED INVERT PIPE—

Booklet—How bituminous material is actually bonded to galvanized metal in such manner that it will stick permanently.
Armco Culvert Mfrs. Assn., Middletown, Ohio.

Trucking Farm Crops Gains

MOVEMENT of farm products to market by motor truck — many shipments traveling long distances over the roads of several States—continues to increase, the Bureau of Agricultural Economics reports.

The movement includes large tonnages of fruits, vegetables, cattle, hogs, sheep, milk, butter, eggs, poultry, and other farm products.

Compilations by the Bureau show that nearly 17 per cent, or 107,422,000 pounds, of total receipts of butter at New York, Chicago, Philadelphia, and Boston came to market by truck in 1935. The Chicago market received 35 per cent of its butter by truck last year compared with 30 per cent in 1934, and New York received 9 per cent of its butter last year compared with 3 per cent in 1934.

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What's Ahead and Current In the Zinc Industry?

(Continued from page 35)

motional work carried on by the zinc industry are beginning to show up in a marked manner. For six years the Zinc Institute has sought to win back lost markets and develop new and wider uses for galvanized products. Thousands of dollars contributed entirely by the zinc industry have been spent in such work and also to influence the manufacturer and consumer towards higher standards of quality.

Over 42 per cent of all slab zinc consumed is used in galvanizing. In 1929 almost 143,000 tons were consumed in galvanized sheets alone. This dropped to 52,500 tons in 1932 but in 1935 rose to 110,000 tons, a gain of 28.27 per cent over 1934. Galvanized sheet mill operations averaged about 57 per cent of capacity in the first four months of 1936 as against 51.9 per cent for the like period last year so that further recovery is indicated.

Recently a group of job galvanizers organized the American Hot Dip Galvanizers Association, its object being to establish a standard of quality and to promote hot dip galvanizing and extend the use of galvanized products in the job galvanizing field.

The foregoing figures show the remarkable growth of zinc in die castings. The 75 per cent increase in one year is a tribute to the research chemists and engineers who for many years worked to increase the purity of the base metal, and persistently applied themselves to the many problems which attend the development of a new idea. In this connection, C. R. Ince, Assistant Sales Manager of the St. Joseph Lead Company, recently said:

"The increase in purity of the base metal has greatly improved the physical properties of zinc die casting, and opened up many new fields of use. . . . With an average of 20 to 25 pounds of zinc on every car, the introduction of new car models last fall may have had the effect of increasing high grade consumption, to some extent at least, at the expense of this year's consumption. On the other hand, the solution of the problems which arose in the casting of die-cast radiator grills, weighing as much as 24 pounds, has opened up new fields for the use of zinc castings, which should bear fruit this year in an increased demand for high purity metal."

Improved Outlook

Rolled zinc in 1935 made a gain of 38 per cent over the previous year and all other principal uses also made substantial gains even though they were not as

Blooded Beef Stock Raising Proves Profitable

Florida Grown Range Stock, Pen-Fed, Wins
Prize at Jacksonville Fat Stock Show

RAISING better grade beef cattle is a paying business in Florida.

H. W. Grimes, Elkton farmer and cattle raiser, reports success of a recent experiment with blooded beef stock taken from the range and pen-fed for the market.

Three steers selected from an experimental lot won second prize in the "pen of three" at the recent Jacksonville Fat Stock Show. The steers were half-breed, native stock, crossed with pure-blood Aberdeen-Angus. At 2½ years, after being pen-fed for 120 days, they averaged 800 pounds, and sold for an average of 7c per pound.

The cost of producing the range stock, taking the average for 500 cattle, was \$9.00 per head, Mr. Grimes reports, and the cost of pen-feeding the 30 steers, using bought feed exclusively, was \$23.00 per head, making a total cost of \$32.00 per steer ready for the market, which left

a profit of \$24.00 per head, or 3c per pound.

Before the steers were placed in the feeding pen they were appraised by competent cattlemen at \$24.00 per head. Considering the cost of raising the steers on the range, there was a possible profit of \$15.00 per steer. Since the final profit, resulting from pen-feeding, was \$24.00, pen-feeding made possible an additional \$9.00 profit. By using home grown feed the pen-feeding profit would be greater.

Care and attention on the range as well as in the feeding pen are considered primary requisites by Mr. Grimes, who operates on a tract of 2,000 acres leased from the Model Land Co., of St. Augustine, Fla. J. W. Hoffman, vice president and general manager of the Model Land Co., anticipates the raising of beef cattle in Florida is one of the coming industries of the State, offering "exceptional opportunities for investment." It is estimated that Florida now produces only 25 per cent of the beef consumed in the State.



spectacular as those calling for special comments.

Stocks of slab zinc in hand represent something less than two months' supply and are at the lowest point since 1929.

The price of Prime Western zinc advanced from 3.70¢ per pound E. St. Louis to 4.85¢ in 1935 and is now at 4.90¢.

To sum up, conditions in the zinc industry make a better showing than for some time past and provide a sound basis for the hope that 1936 will bring further improvement.

Rockstone Maintenance Materials

The Rockstone Co., 250 S. Broad St., Philadelphia, Pa., was recently organized to market industrial building maintenance materials for floors, platforms and other purposes. Among the specialties handled are resurfacers, floor preservers and integral liquid hardener for concrete floors; black top industrial floors; ten

shades of dry colors for concrete floors; floor hardener crystals; roof resurfacer; concrete waterproofer; concrete accelerator and a patented concrete aggregate. Besides, Rockstone inspector services are provided.

Chemurgic Conference In South

A SOUTHERN Chemurgic Conference will be held at Lafayette, La., October 15 to 17. With the co-operation of the Farm Chemurgic Council, of Dearborn, Mich., and the Chemical Foundation, New York, the conference is being organized by the Chamber of Commerce of Beaumont, Texas and the Lafayette Chamber of Commerce.

The main program will center on a discussion of major Southern crops—cotton, sugar, rice and wood pulp. Cotton will be discussed as a cellulose crop and cottonseed as an oil crop. The program will include several subjects secondary to the main discussions—naval stores, tung oil, sweet potatoes, etc.

THE STORM SEASON—

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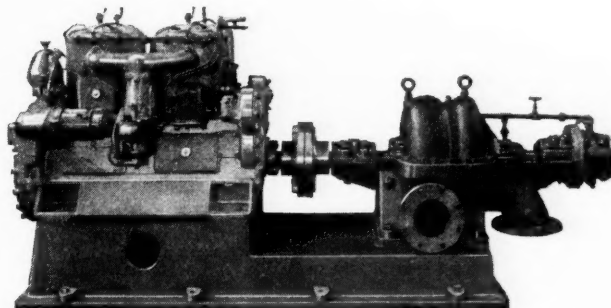
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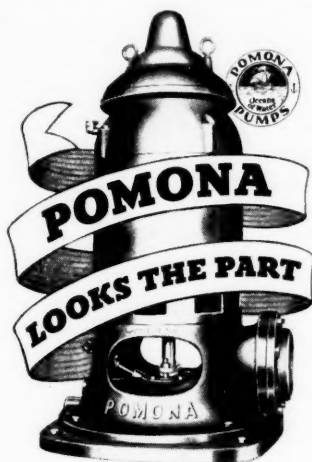
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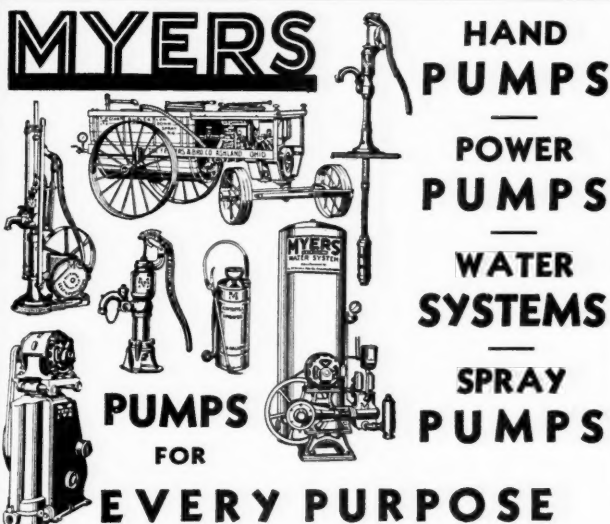
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Use Of Aluminum Alloy Cuts Motor Coach Weight

Radical Departures in Design, Construction and Equipment Feature Newest Buses for Greyhound System

BEFORE the end of the year 300 to 400 "super-coaches"—a brand new type of passenger bus—delivery of which began last month, will be placed in service on Greyhound's nationwide system.

Involving radical departures in almost every detail, the new units are entirely different from any previous type used in the bus industry. The new features include:

A passenger deck much higher than on present buses, above the vibration line, further removed from dust and noise and facilitating long-range vision.

Redesigned, individual deeply-cushioned chairs with frames of magnesium and aluminum alloys, with longer spacing between chairs and an improved design to increase the leg room, yet the bus seats 36 as compared with 33 in older type buses.

The interior of the bus body is free of all obstructions, and all hand luggage is stored in compartments beneath the floor.

A new system of lighting—a continuous circle of frosted glass tubing running around the ceiling of the car, with another continuous set in the center of the ceiling.

A constant flow of clean, fresh air provided through four air ducts, which run lengthwise between the inside and outside roof panels.

The engine is mounted in the rear of the bus, parallel with the rear axle—designed to increase power and efficiency, provide for quieter operation, less vibration and eliminate absence of exhaust fumes.

Built almost entirely of aluminum alloys, the coaches weigh two tons less than the present Greyhound bus equip-

ment, resulting, it is said, in a well-balanced vehicle, possessing additional strength at vital points, with smoother performance and greater braking efficiency.

The most pronounced feature in the exterior design of the new bus is the absence of the hood. The driver is well up in front, high enough to look over approaching cars. Although the passengers ride much higher than in present

buses, the design is such that it actually swings the weight of the vehicle lower than ever, thus increasing the safety factor and ease of handling.

The new type of engine mounting provides better balance, providing not only a smoother ride, but relieving side-sway, skidding and road shock, besides being credited with decreasing the cost of operation through less wear on tires, and at the same time making driving and steering easier.




Buy Road Sweepers

The State Roads Commission of Maryland purchased five road sweepers from the Frank G. Hough Co., Chicago, through the Baltimore contractors' equipment firm of D. C. Elphinstone, Inc. One of the machines is of the blower type and the others of the rotary brush type. The blower machine delivers a fan-created air current through a spout to clean the surface of the road. The


other type is equipped with a variable speed brush. All are equipped with Hercules motors.

It is expected that the new sweepers will be used by the Commission in an extensive surface treatment program about to be launched. Contracts for the work have just been let. The blower sweeper will be stationed at Laurel and one of the others at each of the following: Cumberland, Salisbury, Aberdeen and Towson.



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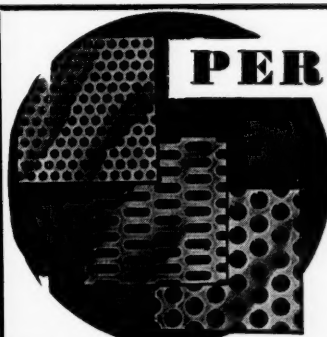
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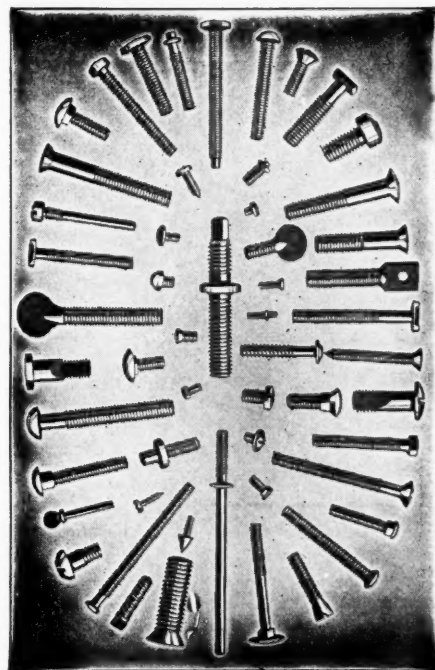
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Bethlehem Opens \$20,000,000 Continuous Rolling Mill

Representing an investment of \$20,000,000, a continuous strip-sheet and plate mill with an annual capacity of 600,000 tons of strip, sheet and light plate has been put in operation by the Bethlehem Steel Co. at its Lackawanna (N. Y.) plant.

Bethlehem's entry into the strip-sheet markets through this new continuous mill is the result of increasing demands for flat-rolled products and the anticipation of further extension of this field. So-called flat rolled products consist of plates, skelp, sheet bar, strip, sheets, and tin plate. The automobile, it is pointed out, is largely responsible for these increased demands, but in addition to the use of strip and sheets for automobiles, there has been a large increase in the demand for ducts, containers, siding, roofing, furniture, and formed and stamped products.

The new mill is one of a few continuous mills to produce strip and sheets of extreme widths, enough to satisfy substantially all present demands for extra wide sheet products for such large forming operations as all-metal tops for automobiles and other recent "one-piece" installations.

Wide strip ranging up to 60 inches by .0625 inch in thickness, and 72 inches in width by .078 inch in thickness, with a minimum width of 18 inches by .05 inch in thickness, can be continuously hot rolled in one heating in the new hot mill, while cold rolled strip is produced in a range from 18½ inches to 72 inches wide and from .0125 inch in thickness for narrow widths up to .109 inch in thickness. By cross-rolling in the 93-inch 4-high skin pass mill, sheets may be rolled up to 84 inches in width.

Slab leaving the furnace passes in continuous motion through tandem trains of rolling mills, coming out at a speed up to 1350 feet a minute in strip or sheet form, traveling one-third a mile in two minutes or less.

Ample and coordinated facilities for every important form of processing strip and sheet steel as such, are provided in the new mill, but not including rolling down to tin mill gauges or coating processes. Hot and cold rolled tin plate is made at Bethlehem's Sparrows Point plant. All possible refinements for hot rolled products, as well as cold rolled sheet and strip for which there is a commercial demand, are provided, and at the same time the mill is equipped to roll and finish light plate up to one-half inch thick.

Seen from the outside, the magnitude of the new buildings is impressive, but once inside the roominess of the well ventilated and well lighted interiors seems by comparison to dwarf the batteries of huge rolling mills and great furnaces. In the sequence of operations the slab storage building comes first, with dimensions of 625 by 85 feet, piled high with some 10,000 tons of slabs ready for heating and rolling as needed. At the beginning of the hot mill department, between the slab storage yard and the hot strip rolling mill, are three large recuperative heating furnaces.

The mechanical dexterity of the whole plant is most striking in the hot strip rolling mill building, with the hot slab continually moving through rolling mills toward the automatic piling and coiling apparatus in the finishing building. The three buildings located side by side are without interior side walls in order to facilitate transfer of material from one department to another. They are 350 feet wide and range in length from 600 to 1050 feet.

Spaciousness is also the dominant factor in the adjacent buildings of the cold mill department. Following the order of processing, first comes the continuous pickling building 105 by 950 feet, one end filled with coils of strip in storage which will go either through the cold mills or be shipped direct to customers. The three large buildings for cold rolling, processing and storage, and shipping, stand side by side. They range from 575 to 1100 feet in length, and, with 315 feet of width, create a great open area interrupted only by steel framework and machinery. The buildings were fabricated and erected by the Bethlehem Steel Co.

Texas Leads In Output Both Wool and Mohair

Many Warehouses in State with Opportunities for Establishing Wool Scouring Plants

RANKING first in agriculture with a total value of output over \$543,000,000 in 1935, Texas is the leading wool and mohair producing State of the Union. The number of sheep and lambs shorn in Texas in 1934 was 7,311,359 which produced 52,564,478 pounds, 17 per cent of the entire national clip, reports J. E. McDonald, State Commissioner of Agriculture. In the production of mohair, Texas claims 90 per cent of the country's output. Wool and mohair are shipped from concentration points largely to the Middle West and to New England.

In the state are more than 2,368,000 goats, four-fifths in the country, and 7,026,000 sheep and lambs. Oftimes on ranches are single herds numbering 5,000. While sheep and goats are raised on many Texas farms, the larger part of the industry is confined in 35 or 40 counties in an area beginning at Austin and extending northwest, west and southwest.

As a result of extensive developments in sheep and goat raising, numerous wool and mohair warehouses have sprung up.



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100,000 Tons

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Silica	36.52	Calcium Oxide	.51
Ignition Loss	17.85	Soda—Na ₂ O	.50
Iron Oxide	.45		
Alumina	44.12	Moisture at 100 C	.05

Oil Absorbed by 20 grams	100.00%
Bulk weight per cu. ft.	7.2 cc
Specific Gravity	44.5 lbs.
	2.38

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KVA	Make	KVA	Make	H
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25	Gen. Elec.	50	Gen. Elec.	H
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312	C. W.—Ames Uniflow	N.Y.
180	G. E.—Chuse Uniflow	Miss.
150	Wghse.—Erie Ball 4 v.	Texas
150	G. E. Ames Uniflow	Ga.
150	G. E.—Erie Ball 4 v.	Mass.
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600 G.E. Sl. Rg.	252
600 G.E. Synch.	257
400 WEST. Sl. Rg.	505
400 G.E. Sl. Rg.	885
300 G.E. Sl. Rg.	575
300 AL. CH. Sl. Rg.	585
2-200 WEST. Sl. Rg.	900
200 G.E. Sl. Rg.	900
150 G.E. Sl. Rg.	870
150 G.E. Sl. Rg.	1750
100 G.E. Sl. Rg.	700
100 AL. CH. Sl. Rg.	695
100 WEST. Sl. Rg.	1160
90 G.E. Sl. Rg.	720
75 G.E. Sl. Rg.	1200

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V. 514 R.P.M. 3 Ph.
60 Cy.
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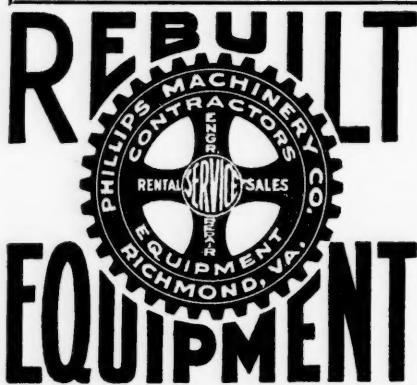
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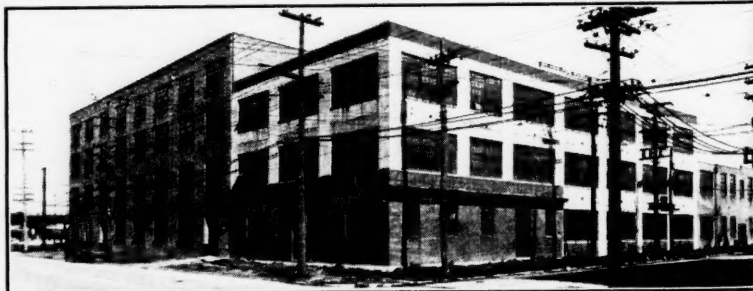
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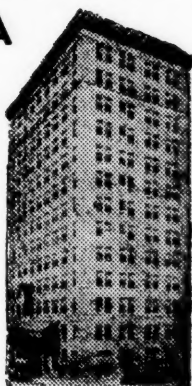
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Honoring An Industrial Leader

THE "essence of a remarkable wave of community sentiment" impelled 30,000 people of Middletown, Ohio, to do honor in a full day's celebration to George M. Verity, chairman of the board of the American Rolling Mill Co. The occasion was not purely a community affair, but a means by which the 4700 employees of the ARMCO Middletown plant paid tribute to Mr. Verity, who has turned 71 years of age. During the past 36 years he has been a resident of Middletown.

Under his leadership ARMCO has become the principal industry of Middletown, while other interests, civic and social, have felt the force of his influence. With a natural flare for social problems, he charted a set of written policies relating to employer-employee relations which are, in a sense, a development of the Golden Rule. He made social welfare in the community one of his concerns and conceived the idea of a central civic organization of all health, welfare and character-building agencies. From this interest grew a much-needed hospital, an active Y. M. C. A., and a broadening of the Boy Scout, Girl Scout and other character-building agencies. He also established a 400-acre park, created an 18-hole golf course and other facilities for recreation and better living.

Every store and factory in Middletown closed at noon on the day of the celebration, and delegations from Zanesville, Ohio, Ashland, Ky., and Butler, Pa., where ARMCO also has plants, were present to pay tribute to the distinguished industrial leader and to bestow upon him tokens of their sentiment.

Charles Ball, 84 years, the oldest active employe of the Zanesville plant, presented Mr. Verity with a bouquet of 84 roses—one from each of the eighty-four 25-year men in that plant.

Heading a delegation from Butler, Mayor George H. Thompson presented a resolution passed by the City Council expressing appreciation of the benefits the ARMCO organization has conferred upon that city, and a bound volume of messages of greetings and appreciation from civic, business and social leaders of Butler.

F. E. Vigor, works manager of the Ashland plant, on behalf of the supervisory organization, presented a desk set, and on behalf of 3100 employes of the Ashland division, an engraved letter of tribute from the Employees' Representatives' Committee. Mayor William Simpson headed the Ashland delegation.

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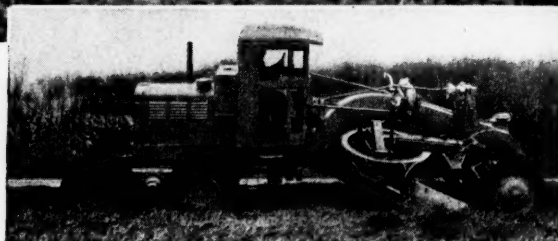
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